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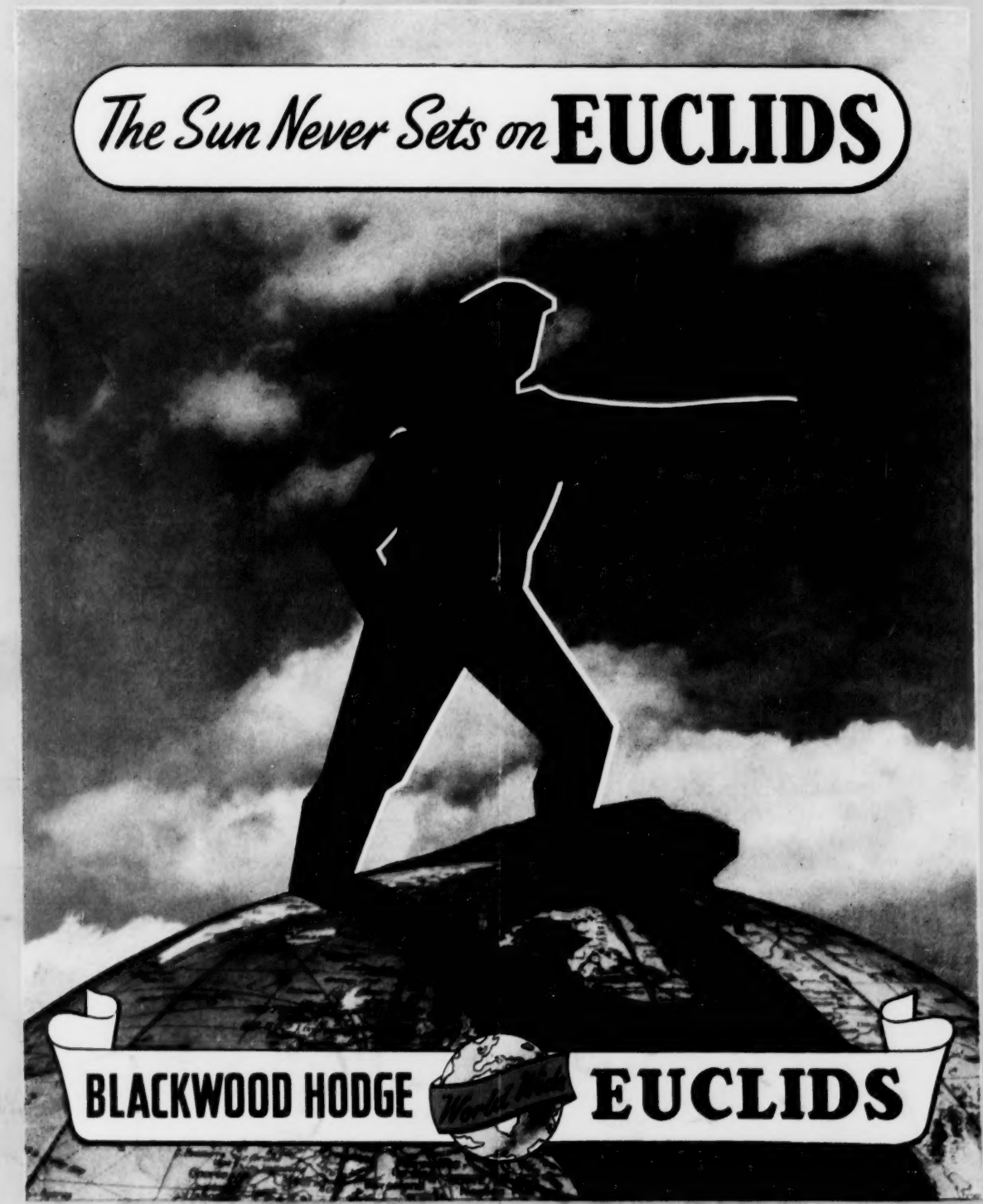

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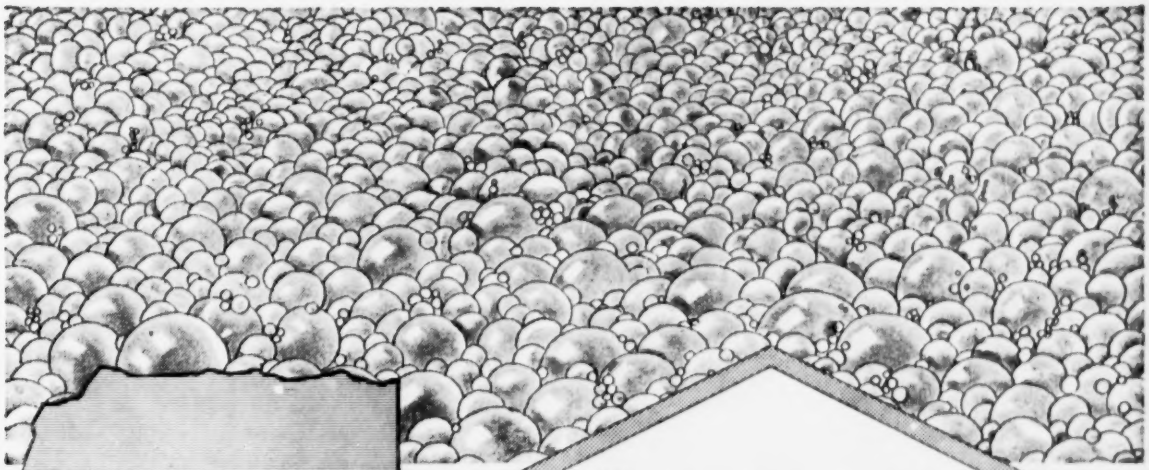

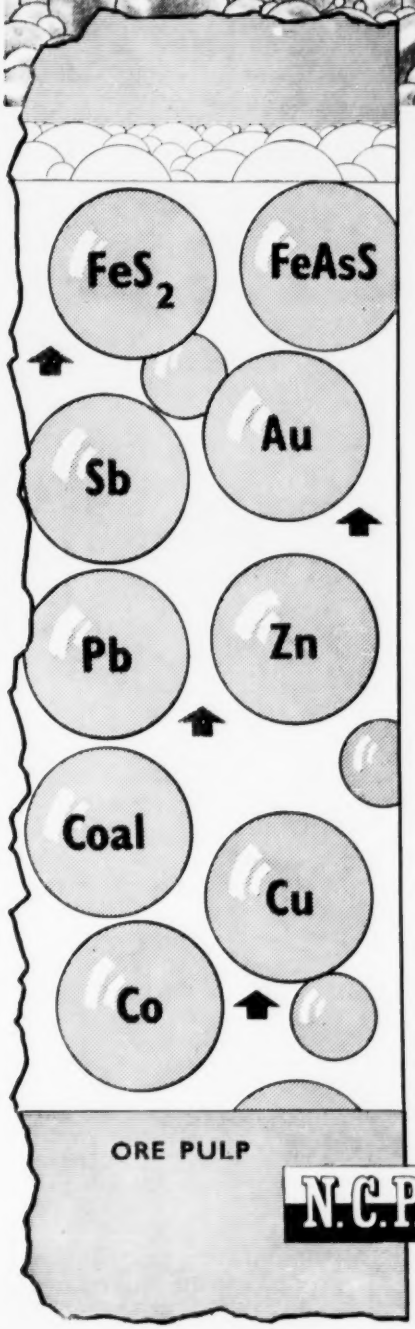

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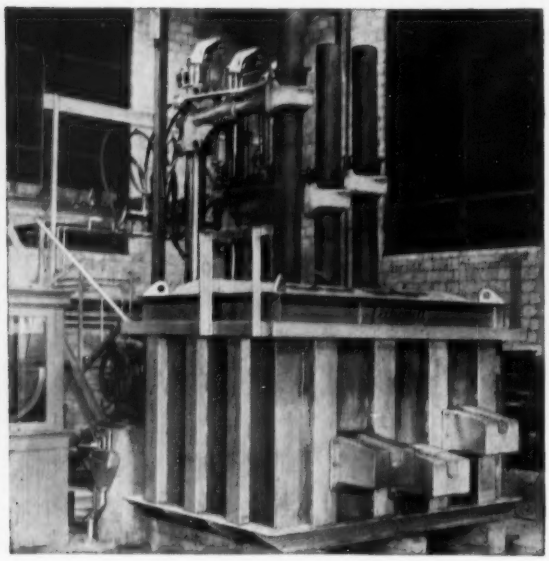

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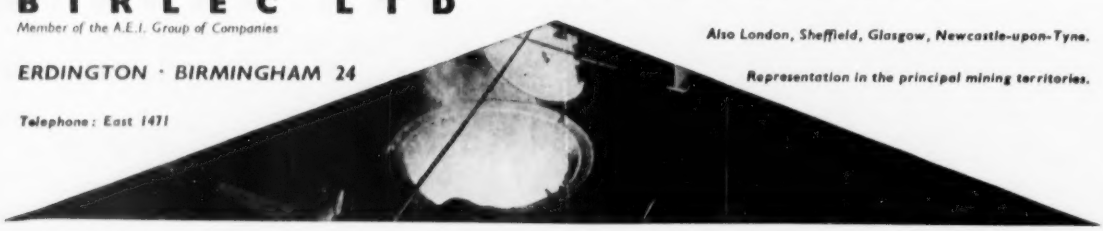

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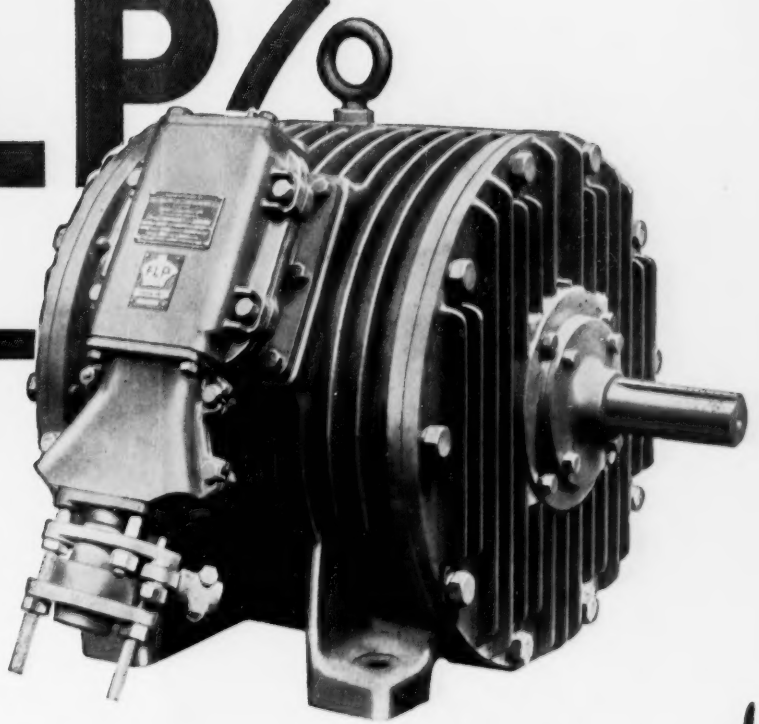

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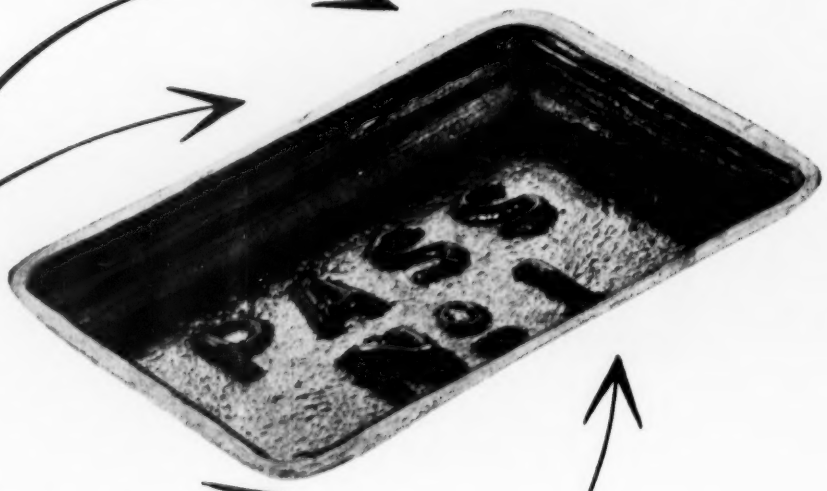

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NOTES AND COMMENTS

Prestige on the Copperbelt

It is generally agreed that copper has a long way to fall before it can free itself from the threat of substitution by aluminium and plastics. Whether it will in fact fall depends on whether supplies of the metal flow uninterruptedly from the refineries for some months ahead. In Chile and the United States the position is clear; in the one trouble must always be expected, in the other there is a prospect of peace at least till the wage bargaining season opens again in the summer.

In Rhodesia, however, the outlook is obscure. The claims for higher wages by both the European and the African unions have now passed through conciliation and both await agreed statements of the issues so that they can go on to arbitration. Both claims are substantial. The African claim of 6s. 8d. a shift (not to be confused with this week's award of 1s. per shift to higher categories of workers) would raise production costs by 35s. a ton; the European claim of 15 per cent on the artisan's rate would cost about £374,000 plus bonus.

On a narrow view the companies can well afford either —or both—wage claims, as copper mining is a highly profitable business just now. But then so is working for the copper companies and one may well ask why European workers, whose wages are now running at a rate of £2,400 a year plus benefits, or African workers, who are far and away the best paid Africans in the Federation, feel in need of so much more money? The answer in both cases is probably prestige.

The European workers have this year accepted African advancement and have yielded certain categories of jobs. They have had no *quid pro quo* except in the sense that they have warded off racial troubles from which they themselves would have suffered as badly as anyone. They must expect to have to yield further categories of jobs in the future. Furthermore, the palmier days of the copper bonus may now be ending and a real and permanent fall in wages may be their lot. But for all that the Europeans will remain one of the highest paid groups of workers in the world and the incentive to achieve skilled status is already substantial without the addition of 15 per cent.

The African claim for 6s. 8d. seems to be in search of prestige of another kind. The union leaders probably feel the need to re-assert themselves in the eyes of their members. At the beginning of the year the members followed their leaders to an extent which surprised most people, but in the end their strike failed. Later the African advancement programme was agreed, but it was fundamentally an agreement between the Chamber and the European union. The struggle over the claim of the European union to exercise a power of veto on future job transfers emphasized where power lay and which parties were involved in the bargaining. In other words, the African's big failure was the union's strike and their big gain was the advancement programme, which, however, was given to them and not extracted by them. What is more, advancement was given to them as a race and not as a union.

The possibilities of the situation are easy to see. The need to re-assert themselves may tempt the African union's leaders along dangerous paths. It is possible to wonder whether, if a strike were to ensue, the African union would actually survive it if it did not gain a resounding victory. Some might think this would not be a loss, but that is not the view of the companies which have done everything possible to help the African union to function. Yet it may not be enough to give the union "facilities". What a union needs to show to its members is results; and the plain truth is that the African union is not powerful enough to win spectacular results—this year's strike proved that.

In view of this, it may be that an opportunity was lost in the advancement negotiations to associate the African union more imaginatively with the presentation of the African advancement programme and thus to strengthen the self-confidence of the African leaders. Certainly, writing at a distance from the scene of events, the importance of prestige in the conduct of industrial relations in Rhodesia seems to us not to be fully appreciated. While these are long term considerations and can now have little bearing on the present dispute, it may be that if they were given greater weight, such disputes might be slightly less likely to arise.

Statistics in the South African Gold Industry

Our Johannesburg correspondent writes to us this week pointing out that a considerable amount of discussion has been taking place on whether the time has not arrived for a revision of mining statistics to bring them into line with present conditions, and whether standardization should

be developed so as to allow more accurate comparisons to be made for the industry as a whole and in respect of individual properties. In particular, the "cost per ton" basis has come under fire. It is stated that this is no longer realistic with the growing amount of reef-picking and waste-sorting being practised. Not only is it impossible to compare one property's working with that of another, but the method no longer provides an accurate basis for the trend of the industry's working costs. This was most apparent in the official figures of operations for the first nine months of this year issued by the Chamber of Mines this month. Compared with the same period of 1954 working costs per ton milled rose from 38s. 5d. to 40s. 1d., but working costs per oz. of gold fell from 190s. 6d. to 188s. 11d. The point now being made is that the only correct yardstick must be in terms of the final product and that calculations on the cost per ton basis should be relegated to quarrying activities.

It will be recalled that these views formed an important part of Mr. Robert Annan's statement to the shareholders of Consolidated Goldfields in December, 1953, when he commented that the vital factor in assessing cost-revenue relationships in the South African mining industry was the cost per oz. of gold produced. As he said the cost per ton milled of the mines on the West Wits line is above the average for the industry, but the cost per oz. of the gold they produce is 39 per cent less.

If this was true two years ago it is even more to the point to-day when the overall statistical picture of the South African gold mining industry is increasingly distorted by the number of new, higher grade, gold producers in the O.F.S. and Far West Rand. In terms of costs per ton milled, these mines show themselves at a disadvantage as their working costs per ton milled seem inordinantly high when compared with the old-established mines, but, and this is the point, because the average grade of ore sent to the mill is much higher than on the older mines on the Rand, they are able to show a high profit per oz. produced—a fact neither clearly understood nor appreciated by those whose assessment of the South African gold mining industry is based on costs per ton milled.

At the same time it is perhaps worth pointing out that if cost per ton is to be discarded as a unit of measurement, we have first to find an acceptable alternative basis for measuring productivity, which is becoming of greater interest now that so much attention is being paid to increasing the efficiency of the African mines. Perhaps an O.M.S. basis could be used in the published reports.

It is also being suggested in Johannesburg that some uniformity be sought regarding ore reserve figures. This was precipitated by the sharp drop in value in the latest President Brand figures which focused share market attention on the diversity of relationship between reserve figures and milling grade on the mines of the various groups. In some cases, grade was well in excess of published reserve figures and in others it averaged only about 70 per cent. From the investors' viewpoint, uniformity is most desirable so that relatively accurate assessments of future profits can be made

Aluminium Forges Ahead in U.S.

In Washington the Office of Defence Mobilization has announced a reduction in the Government's stockpiling target for aluminium. Primary producers will not be required to supply any metal to the stockpile during the first half of next year. A decision has also been taken to extend until April 30 of next year the delivery period for the 25,000 tons of aluminium previously scheduled for delivery to the stockpile by the end of this year. These adjustments are stated to have been justified from a defence standpoint in view of the expansions in aluminium capacity now planned and underway, which are expected to provide a larger supply of metal in the event of an emergency than was originally anticipated.

Despite the Government's announcement in September that it would issue no more quick amortization right-off certificates on aluminium plants, there are a number of new projects in hand. Among them, Kaiser plans to add 90,000 tons of annual capacity, Reynolds 135,000 tons and Revere Copper and Brass 60,000 tons. Revere is at present only an aluminium fabricator and will be entering the primary production field for the first time. In August Anaconda Copper started a 60,000 ton aluminium plant at Colombia Falls. The Harvey Machine Co. plans to start construction next year on a $65,000,000 reduction plant in Oregon and the G.S.A. has signed a contract with that company for 270,000 tons of metal by June, 1963.

In addition to all this both Olin Mathieson and St. Joseph Lead are considering entering the field although in each case their plans appear to be dependent upon the successful outcome of negotiations with electricity utilities for the supply of cheap electric power produced at the pithead from coal produced by the Pittsburg Consolidation Coal Co. which is reported to be interested in both these ventures.

As matters stand now, U.S. primary production will this year set another record at 1,550,000 s.tons against 1,460,000 s.tons in 1954. Moreover, at the recent Aluminium Association meeting in New York a McGraw-Hill economist was quite seriously forecasting that the industry could be expected to expand at least another 50 per cent by 1960, while only last week Mr. H. J. Galamba, president of the Sonken-Galamba Corporation, predicted a U.S. output of secondary metal of 650,000 s.tons compared with an estimated output of 309,000 s.tons this year.

It is quite obvious from all this that the tremendous future for aluminium in the States stands in no need of Government aid. To-day the availability of cheap power remains the only brake on much more rapid expansion of capacity than has yet been planned.

German Steel Production Greater than in Britain

Last month the British steel industry produced 399,500 ingot tons a week, equivalent to an annual rate of 19,615,000. As the steel industry usually produces at a higher rate in November and December than the average for the rest of the year, this country can, with a fair degree of confidence, look to an end-year production total of 19,750 ingot tons.

But the West German steel industry, which nearly matched British steel production last year—1,430,000 tons a month, compared with Britain's 1,543,000—expanded production perceptibly this year. In the first nine months of 1955, West Germany's output of crude steel totalled 15,500,000 tons and in the same period crude steel production from Britain's steel mills amounted to 14,600,000 tons.

Not much more than ten years since the end of the war it now appears almost certain that Germany will become the third, and Britain the fourth, largest crude steel producer in the world.

50th Anniversary of Monel

On Friday, November 11, Monel, which comprises some two-thirds nickel, one-third copper with controlled amounts of iron, manganese, etc., and was the first of the modern corrosion resisting alloys, celebrated its fiftieth anniversary.

When Monel was first manufactured in 1905 by the International Nickel Co., its applications were limited and its future uncertain. Since that time, however, the use of

Monel has penetrated most facets of industry. Indeed, with industry becoming more and more corrosion-conscious, the need for all types of corrosion resisting materials is expanding. Yet the continued shortage of nickel and copper has placed a high premium on this new alloy and thus its misapplication in industry can mean inadequate supplies to fulfil a more vital role elsewhere for which it may be an essential component. In fact, this is the message that Henry Wiggin and Co., which has been producing the alloy since the Monel Weir Co. in 1932, made known at a recent press conference at which Mr. I. A. Bailey, managing director, said, "Good materials are not so plentiful that we can afford to misuse them. It is not our wish that Monel, or any of our other alloys, should be used to do a job for which it is not suited."

Western United States

(From Our Own Correspondent)

Portland, Oregon, November 10.

A Senate sub-committee on Mines, Minerals and Fuels has recommended the creation of a new cabinet Department of Mineral Resources. A Bill to create such a department was introduced in the last Congress by Senator Murray, of Montana, but was buried in committee. While there has been a Department of Agriculture for the last three-quarters of a century all efforts to obtain similar recognition for the mining industry have failed and the latter is restricted for representation to various bureaus and "administrations", estimated at 57 in all, many of them unco-ordinated and with similar or overlapping functions. The same sub-committee also recommended that plants for the beneficiation of domestic manganese ores be built as soon as possible. The United States has vast tonnages of submarginal manganese ores, some at least of which can be treated, as evidenced by the operations of Manganese, Inc., of Henderson, Nevada.

THE URANIUM INDUSTRY

A.E.C. has modified its plant at Salt Lake City, which was built before World War II for vanadium ores, to enable it to re-treat the old tailings for any recoverable uranium values.

Uranium exploration is bringing out many unusual and unforeseen situations so that one hardly knows what to look for next. The Colorado Plateau has been the most intensively explored area, but even here there is wide disagreement on such vital subjects as the origin of the ore bodies. Recently apparently important discoveries have been made approximately 200 miles eastwards from the Plateau area under quite different circumstances in formations that are predominantly volcanic, whereas those of the Plateau are sedimentary.

Two strikes, far apart and unrelated, have attracted particular attention. One of these is in the famous old Cripple Creek gold district with assays up to 1.8 per cent U_3O_8, while the other, 100 miles south in the Westcliffe district, noted for high grade silver in the bonanza days, is yielding ores in excess of 4 per cent. In California a discovery that promises well has been made near McKittrick, one of the important oil producing regions, and another at Castle Butte in the Mohave Desert, overlooking the extensive operations of Borax Consolidated, Ltd.

From the standpoint of production, Hidden Splendor mine is making the necessary changes and installations to increase production from a 150 ton daily basis to 250 tons. It may be recalled that Hidden Splendor is the Atlas Corporation operation based on the group bought in 1954 from Mr. Vernon Pick, a transaction somewhat reminiscent of the $10,000,000 purchase by Stratton's Independence gold mine in the Cripple Creek district by an English syndicate at about the turn of the century. Another large operation is under way in the Big Indian district at Continental Uranium. This programme calls for stripping 2,500,000 yards at the Rattlesnake Pit which will make 118,000 tons of 0.3 per cent ore available for extraction. The average depth of the pit will be 160 ft. with surface area of 16 acres. A 200 ton mill is in course of construction in connection with this development.

An interesting angle on the indirect influence of the uranium boom on other phases of mining is noted in the starting of Rico-Argentine's new sulphuric acid plant in Colorado's San Juan district, wholly unconnected with the uranium deposits of the Plateau area. In the big strike days Rico-Argentine was a high grade silver producer, then turned its attention to lead and zinc. The ores are heavily pyritic and the pyrite was eliminated as much as possible in the milling.

With the demand for sulphuric acid to treat the uranium ores of the Plateau region Rico-Argentine found that this large accumulation of tailings, supposedly waste, was in fact a valuable potential asset and proceeded to capitalize on it. A 200 ton contact sulphuric acid plant was built to utilize these tailings and those which might be produced in connection with future lead-zinc operations and went into operation on September 15. This might raise the question as to which is the main and which the by-product of the operation.

THE BASE METALS

The Office of Defense Mobilization announces it will divert 11,000 tons of copper destined for the stockpile to industry during the fourth quarter in an effort to relieve the existing shortage. Previously ODM had rejected a request that a much larger tonnage be taken from copper already stockpiled, something that cannot be done except in case of national emergency.

Bunker Hill and Sullivan, which is equal owner with Hecla, of Sullivan Mining Co., has agreed to buy Hecla's interest in the latter in exchange for 275,000 shares of Bunker Hill stock and will also acquire Hecla's interest in Pend Oreille mines for a cash consideration. This will make Bunker Hill sole owner of the Sullivan zinc smelter and 36 per cent owner in Pend Oreille.

Eureka Corporation, Ltd. (Ventures, Ltd.), has bottomed its TL shaft at 1,127 ft. and is starting lateral development to reach a high grade orebody that has been located by diamond drilling. Eureka Corporation is operating at the old camp of Eureka, Nevada, where several years ago extensive drilling located the faulted segments of rich veins that had been the source of the camp's early productivity. A new shaft, the Fad, was started to reach these but was drowned out by flows that have not yet been controlled in spite of the most persistent efforts and unstinted expenditure of capital. Meanwhile further drilling indicated independent ore bodies above the water level of the Fad shaft, about a mile distant from the latter, and the TL shaft has been sunk to develop these. As indicating the stakes in this venture drilling of the TL orebody showed assays as high as $104 per ton over a width of 15 ft.

Kaiser Steel Corporation is expanding its beneficiation facilities at its Eagle Mountain operation in Southern California. Present plant is on a sink and float principle which yields a product of 55 per cent iron. The new plant will involve both gravity and magnetic concentration to improve the grade to 60 per cent. Annual output is rated at 2,000,000 tons.

Use and Occurrences of Strontium

The minor metal strontium has not of late years been the subject of comment in *The Mining Journal*. Although it is of little structural importance, strontium is described fully in a chapter of *Bulletin 556, Mineral Facts and Problems*, from which the following article is condensed. The report is by J. C. Arundale, assistant chief of the Construction and Chemical Materials Branch of the U.S. Bureau of Mines, and his remarks are of value in that they consider strontium from an international, and not merely an American point of view. The several problems of U.S. producers of strontium include competition from foreign sources largely owing to internal transportation costs, the need for new applications for the product, and the need to reduce price by the establishment of volume application. Although little incentive exists to develop strontium mines in the United States, use of the mineral is considered of sufficient importance to warrant stockpiling or other measures to ensure adequate supply.

Strontium is widespread in the rocks and waters of the earth's surface, but only two minerals are important commercially. The more important of these (by reason of its more common occurrence) is celestite, the strontium sulphate ($SrSO_4$). Strontianite, the strontium carbonate ($SrCO_3$), is more limited in supply but often occurs associated or mixed with celestite.

Before 1914 most strontium compounds came from Germany; however, during World War I, when German supplies were not available, the United States established domestic facilities for processing strontium minerals imported from the United Kingdom. The bulk of the strontium minerals consumed in the United States now is celestite imported from the United Kingdom and Mexico.

U.S. production of strontium minerals has been small and sporadic. Several deposits, however, are known in the United States, notably in Texas, California, Arizona, Washington and several other States.

Although U.S. deposits have not been explored thoroughly, reserves in the known deposits have been estimated at several million tons.

Celestite and strontianite occur in many localities in England and Scotland. The important deposits are in Gloucestershire and Somerset, where celestite lenses and irregular masses are associated with gypsum, marl, and dolomitic conglomerates. In Mexico celestite is found in the Provinces of San Luis Potosi and Nuevo Leon.

In Germany strontianite has been produced near Münster in Westphalia from irregular lenticular veins in marls. Numerous occurrences of vein deposits are reported in Canada. Celestite is associated with sulphur deposits in Sicily, and there are similar deposits in the vicinity of Archangel in U.S.S.R. Large deposits of celestite occur in Spain, and the United States purchased large tonnages from this source as a result of a preclusive buying agreement during World War II.

PRODUCTION AND USES

Strontium minerals have been produced by simple methods and on a small scale. The U.S. Bureau of Mines and a domestic firm have conducted research on a flotation process for recovering celestite from Texas ores. During World War II this ore was processed by grinding and tabling. The concentrate obtained was low grade, and production was discontinued when higher grade foreign material was made available. In England and Mexico the ore is mined by open-pit methods and hand-picked. It is reported that some English operations now are using mechanical separation methods.

Users of celestite for chemical purposes generally specify a minimum of 92 per cent $SrSO_4$, maximum of 4 per cent $CaSO_4$, and maximum of 4 per cent $BaSO_4$. Imported material usually is about 95 to 96 per cent $SrSO_4$.

American companies which convert strontium minerals into compounds are E. J. du Pont de Nemours Co. utilizing English celestite, Foote Mineral Co. using English and Mexican celestite, and Barium Products Ltd. and Pan Chemical Corp. who both use small quantities of locally-produced celestite. Strontium metal is produced by King Laboratories Inc. and by Cooper Metallurgical Associates, although only small quantities are manufactured. Metal Hydrides Inc. produces small quantities of strontium hydride.

Most of the strontium minerals consumed are converted into various chemical compounds. A common procedure for producing these compounds is to digest finely powdered celestite in a hot soda-ash solution, yielding the less soluble strontium carbonate; this is treated with the appropriate acid to make the desired salt. Another method is to burn finely powdered coal with celestite, producing a soluble strontium sulphide. This is leached from the clinker with water and filtered. The solution may be treated with carbon dioxide to produce the carbonate. The nitrate is produced by treating with nitric acid. Strontium metal can be produced by electrolysis of fused strontium chloride and ammonium chloride. It may be produced also by thermal reduction of strontium oxide with metallic aluminium.

PROPERTIES OF STRONTIUM

Strontium compounds impart a characteristic brilliant red colour to a flame, and this property is utilized in several pyrotechnical applications. Tracer bullets contain a charge of strontium nitrate and peroxide in the base of a bullet, which are ignited by the propellant and burn brightly during flight, while marine flare equipment, signal flares used by the armed forces, fireworks and several types of signalling equipment are given their familiar red colour by the properties of several different strontium compounds.

In Germany sugar-beet molasses is treated with strontium hydroxide to recover sugar and minor applications of strontium compounds are in ceramics, depilatories, medicine, and heat-treating metals.

Strontium metal and some of its alloys are used principally as "getters" for extracting the last traces of gases from electronic tubes. This use is very small—only a few pounds annually. The price of metal is relatively high and range from $7 to $35 a lb., depending on quality.

The crude minerals have been utilized in well drilling mud, in purifying caustic soda, as a filler, and in desulphurizing steel, but only small quantities are used in the United States for these purposes at present.

There are many potential uses for strontium minerals, compounds, metal, and alloys, but an evaluation of these is difficult. Considerable quantities of strontianite have been used in Europe as a flux and desulphurizer in high-grade steels. U.S. steelmakers have experimented with its use in certain grades of basic open-hearth steel as a flux. Strontianite or manufactured strontium carbonate has been suggested as a flux on stainless steel welding rods. The increased use of strontium compounds in glass, enamels, and ceramics is possible. Strontium chloride as a refrigerant and ammonia absorbent in refrigeration is another possibility. Strontium is said to impart valuable properties to nickel, aluminium, and copper alloys.

CHEST DISEASES—II

Chest Disease in Mine Labour

The following article, a concluding instalment, describes the incidence of chest diseases among mineworkers in Canada, notably Ontario, the Kolar Gold Field, South India, and in the United Kingdom. The article is condensed from three papers presented at the McIntyre-Saranac Conference on Occupational Chest Disease at Saranac Lake, New York, during February of this year. All the papers were published in the American Medical Association *Archives of Industrial Health*, as was the paper dealing with occupational chest disease in South African gold mine labour from which the article in *The Mining Journal* of November 11, 1955, was condensed. Readers may like to note that the mine dust hazard in Western Germany is mentioned in the article entitled *Recovery of Science in Western Germany* appearing on the following page.

While statistics relating to the incidence of silicosis among mineworkers in Ontario and the rest of Canada during the last 25 years are somewhat lacking, it is nevertheless fair to say that approximately 70 per cent of the total personnel engaged in gold mining are employed in dust-exposure occupations. This percentage includes all underground workers as well as those personnel working in crusher houses, in milling, and in the assay office. Statistics show, however, that in the Canadian mining industry from 1926 to 1930 the exposure time necessary to produce silicosis was approximately 15.4 years. In the years 1951-1953 this period increased to 24.8 years.

In this paper, entitled *Silicosis in Canada*, N. F. Parkinson, M.E., stressed that his belief was that nowhere in Canada is so much factual information available on the progress and extent of silicosis as in the mines of Ontario. Because of the Mining Act which became effective in that province in 1928, there is a complete chest history of every man employed in a dust-exposure occupation. In Ontario, the Workmen's Compensation Board operates as a semi-government function, an independent Board has been set up under an Act of Parliament, and in addition silicosis was made an industrial disease under the Act of 1926.

In the Province of Ontario, most of the cases of silicosis developed in the mining industry have come from the gold-mining group. Of the total of 1,146 accepted cases since 1926, only 128 have been allocated to the mining of minerals other than gold.

DECREASE IN INCIDENCE

Statistics show that cases of silicosis in Ontario have decreased from 127 in 1926 to 7 in 1953. Of the total 1,146 known cases accumulated in the industry from the commencement of mining activities in the early years of the present century, there have been to the end of 1953 only 45 men, or less than 4 per cent, who commenced mining in 1929 or later who are known to have contracted silicosis.

A summary of Ontario mining experience in relation to silicosis shows that the number of cases of silicosis developing each year in Ontario mines has been decreasing at a rapid rate, and that the average age at which silicosis develops has increased from 41.5 years in 1926-1930 to 56.5 years in 1951-53; an increase of 36 per cent.

In addition, average age at death has increased by 41 per cent from 44 years in 1926-1930 to 62.2 years in 1951-1953, while life expectancy after silicosis develops has increased from 2 years to 11.6 years for the same representative periods. The proportion of fatalities from silicosis or silicosis with tuberculosis has decreased from 91.8 per cent to 55.1 per cent.

Lacking more definite information, it might be assumed that the incidence of silicosis in other provinces of Canada bears some comparable relationship to the statistics relating to population or value of mineral production.

In his paper entitled *Pneumoconiosis on the Kolar Gold Field, South India*, G. E. Ffrench, M.A., M.D., F.R.C.P.(C), formerly senior assistant medical officer on the Kolar Gold Field, stated that pneumoconiosis has been a compensable condition on the field since 1940 and continues to be a potential hazard. This situation exists because up to the present, although there may be considerable dust retention within the lungs of underground workers after a period of 10 to 15 years, little disability is encountered. Although pneumoconiosis does not primarily manifest itself as a clinical disease—but rather as a radiological condition—the potential danger is its association with tuberculosis.

The type of mining carried out on the Kolar Gold Field requires the drilling and working of quartz, occurring in reefs varying from a few inches to 6 ft. in width and dipping at a sharp angle. Depths of 9,900 ft. are being worked and at these levels dry and wet bulb temperatures are high and the use of water in dust prevention is excluded.

The average underground workman is of Dravidian stock, many are second and third generation born on the Field, and these workers usually complete 30 to 35 years of service before retiring. Service normally commences between the ages of 18 and 25 years.

DEVELOPMENT ON THE KOLAR GOLD FIELD

The Mysore Silicosis Rules allow a worker to retire with compensation if simple pneumoconiosis has been contacted, or to continue work. Pneumoconiosis is defined in three stages, namely anteprimary based on radiological evidence only without disability, primary based on radiological evidence with symptoms causing incomplete disability, and secondary based on radiological evidence of pneumoconiosis with clinical and radiological findings of active tuberculosis and/or complete disability.

A tentative figure for the whole field has been arrived at from a study of the men who received compensation between 1948 and 1951. Of 14,000 men, 2.8 per cent received compensation following clinical and radiological examination, the 14,000 group corresponding to two-thirds of the average yearly underground strength. At the same time, however, one-third of the total underground labour force had not been examined under the Rules, and the majority of these had over 25 years of service with presumably a significant degree of dust retention. Of 423 such men examined prior to retirement in 1952, for example, some 44 per cent were infected with compensable pneumoconiosis.

When Ooregum Mines ceased operations in 1953, however, all personnel were subjected to examination, and thus one-fifth of the Kolar Field labour force, constituting a completely representative group, was available for study. Incidence was found to be 625 cases of pneumoconiosis of all degrees among 2,245 workers (27.8 per cent). Of these, 584 (25.5 per cent) cases were in the anteprimary, 32 cases (1.4 per cent) in the primary and 9 cases (0.4 per cent) in the secondary stages. These figures are probably more accurate than the totals so far given for the whole Kolar Field.

The danger of pneumoconiosis on the Kolar Gold Field is in association with tuberculosis. The incidence of radio-

logically apparent tuberculosis among 2,460 surface and underground workers at Ooregum Mines in 1953 was 9 cases of secondary silicosis and 9 cases of pulmonary tuberculosis without pneumoconiosis, namely 7 cases per 1,000.

To describe pneumoconiosis on the Kolar Gold Field as a severe health problem would be overstating the case. It is primarily a radiological condition but at any moment might assume more serious proportions. Experimental studies of dusts on the Field have indicated that the relatively high aluminium oxide content of the air-borne dust may account for the relative harmlessness of the condition.

DUST DISEASES IN THE U.K.

In so far as the United Kingdom is concerned, the replacement of old methods of hand labour by modern mechanized practice has produced more dust in mining operations while simultaneously methods of dust control have lagged behind output. The result has been a remarkable increase in the incidence of the dust diseases, according to A. I. G. McLaughlin, M.D., F.R.C.P.

The following table presents the new cases of pneumoconiosis found in all mining industries of the United Kingdom during 1953.

Type Mining	*Cases*	*Type Mining*	*Cases*
Coal ...	4,048	Other clay ...	2
Tin ...	3	Haematite ...	4
Barytes ...	1	Lead ...	2
Fire clay ...	16	Tunnelling ...	3

The fact that of the total of 4,079 cases, 4,048 occurred in coal mining personnel, reveals the problem with which the coal mining industry of the United Kingdom is faced. It can be said, however, that more than 50 per cent of the cases quoted had only slight disability, and only approximately 3 per cent were totally disabled. The number of cases of incidence in haematite mining is diminishing, but the small numbers found in tunnelling are usually instances of rapid and severe silicosis. To combat dust diseases in the U.K., numerous legal provisions contained in Acts of Parliament and in Regulations, have been brought into force.

Recovery of Science in Western Germany

When the second world war ended scientific research and technological development in Western Germany were at a standstill and the outlook for their early revival was extremely bleak. The remarkable recovery which has been effected in ten years is described by the United Kingdom Organization, formerly part of the Control Commission, in a publication issued by the Department of Scientific and Industrial Research, entitled *A Brief Review of Science and Technology in Western Germany*, published by H.M.S.O. at 4s. Reference is made to a number of projects associated with the mining and metal industries, and much attention is being devoted to working conditions in mines. The following article presents a resumé of the findings of the Organization.

The planning of applied nuclear research is going ahead in terms of the Paris Agreements under which Western Germany is entitled to build and operate a nuclear reactor. Until the end of 1956 this reactor will be limited, by agreement, to 10,000 kW. and to a consumption of fissionable material up to 3,500 grm. per annum.

It is doubtful whether the sources of uranium in Western Germany will be sufficient to maintain the reactor and the possibility of buying uranium from the U.S. is being explored. There are two occurrences of uranium-bearing ores in Western Germany sufficiently promising to permit economic working. One is at Wittichen, Black Forest, and consists of copper, nickel, bismuth and silver, associated with pitchblende having 60 to 85 per cent of uranium oxide. These deposits have not yet been mined for uranium, but some 8-10 tons of uranium are thought to exist in old dumps remaining from previous silver and cobalt mining. The second deposit is at Weissenstadt, Fichtelgebirge, and consists of uranium-bearing seams and granite, with torbernite as the main ore. The search for indigenous uranium ore is continuing and the chemical industry has been investigating the production of uranium metal from the local ore, particularly the processing of low grade ores.

THE LIGHT METALS

In the light metal field attention has been given to the replacement of the rarer metals and those which are difficult to process, by others which are more common and more readily available in Western Germany. Aluminium is being used to an increasing extent as a substitute for other metals, particularly iron and steel, where its lighter weight confers advantages. For example, it is being introduced into the railway transport industry, the shipping industry, and in building construction. There is also a trend to increase its use in the electrical industry as a substitute for copper. The demand for natural cryolite in aluminium smelting exceeds the supply and synthetic cryolite is being used to a great extent.

Copper metallurgy continues to receive a good deal of attention and Lurgi, in co-operation with the Montanwerke Brixlegg, has developed a "roast reduction" method of working up copper concentrates without recourse to converter processing.

MINE DUST IN GERMANY

The quantity of dust found in miners' lungs has been investigated by the Medizinische Forschunganstalt der Max-Planck-Gesellschaft. In a batch of 40 men investigated the maximum amount of coal dust was found to be about 100 grm. Last year an institute for silicosis research was set up at Essen within the Steinkohlbergbauverein. Here work has been proceeding on the measurement and analysis of dusts occurring in mines and equipment has been developed to determine the best methods of working and to reduce the dust in the atmosphere of mines.

An important step towards the protection of underground workers against silicosis is the measurement of dust concentration in all parts of the mines, which enables the dangers to which workers are exposed to be assessed and a scheme of rotation to be worked out to prevent men from staying too long in dangerous places. Some pits have introduced inhalation chambers through which miners pass on their way to the shift. The inhaled aerosol consists of particles of calcium bicarbonate (and sometimes also common salt) which must be sufficiently fine to follow the quartz particles into the alveoli of the lung. These inhalation chambers are claimed to show beneficial results not only in silicosis cases but also in those of whooping cough, bronchitis and asthma. Even cases of common cold are said to occur less frequently among those who take this treatment.

Pathologisches Institut der Bergbau-Berufsgenossenschaft (Silicosis Research Institute) in Bochum is experimenting with different types of apparatus to determine how far aerosols can be used underground in order to cause coagulation of dangerous dusts or to inactivate them once they have penetrated the lungs. For the first purpose sodium chloride seems the most suitable substance, while, for the second, the most promising results have been obtained with calcium and magnesium salts.

Current Developments in the World's Coal Industry

The following article presents a précis of current developments in coal mining round the world in areas as widely separated as Scotland and Burma and indicates that one of the chief ills besetting the industry everywhere is a shortage of manpower or a lack of productivity once the manpower is employed. Not the least of current worries is the time lost on strikes.

Latest available production figures show that the gradual decline in weekly output from British collieries has for the moment at least been halted. However, total output of 176,800,000 tons for the first 42 weeks of this year is 3,200,000 tons below the corresponding figure for last year.

NO CAUSE FOR COMPLACENCY

This deficiency has been more than made up by the imports of 10,000,000 tons of coal and stocks are now higher than at the beginning of any winter since the war. However, there is no cause for complacency. With an import programme costing some £80,000,000 per year—half in dollars—this drain on the balance of payment cannot be increased without restricting the steel industry's imports of iron ore. There is too, an ever present fear of a recurrence of the labour disputes which have so plagued the industry this year and have cost 2,500,000 tons of coal. Since the Budget the National Union of Mineworkers has pursued its wage demands with renewed vigour and labour relations in many areas are so strained that the almost inevitable rejection of some of the union's high pitched demands may precipitate a crisis.

THE FUEL GAP

There is in addition the constant problem of the fuel gap. It is increasingly evident that the Coal Board's "Plan for Coal" will not be translated into fact and indeed the steady flow of manpower from the industry may well prevent even the current rate of output being maintained over the next few years.

Despite the urgency of the fuel situation the N.C.B. is still hanging on to the remnants of Britain's overseas markets—"just in case production revives at home" is the official comment. So important is the retention of the Eireann market that the U.K. is selling 30,000 tons of imported American coal to Eire at a substantial loss. The N.C.B. has contracted to supply 830,000 tons of coal to Eire in the year ending March 31 next—100,000 tons more than the previous year. This country and Denmark are now the only two appreciable importers of British coal and their importance lies in the fact that they are both food suppliers. Open cast production is stepping up and the Coal Board recently announced the award of its biggest-ever contract for working an open cast mine. The new mine is in Northumberland. A note describing the mine appeared in *The Mining Journal* of November 11, 1955.

On a national basis open pit mines have so far this year produced 10,000,000 tons of coal and during the summer, output has been running at 20 per cent above that in the comparable period last year.

DRILLING AT SEA

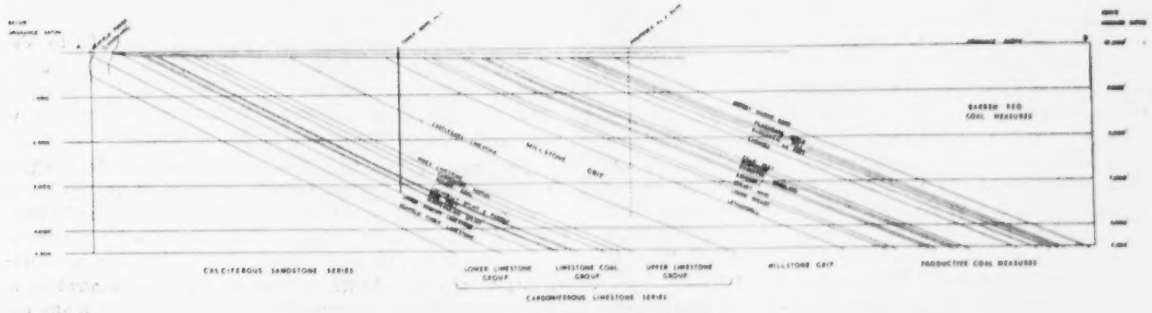
The National Coal Board's sea-boring tower was launched from St. David's Harbour, Inverkeithing, on May 22, 1955, towed down the Firth of Forth by Admiralty tugs, and grounded at a point about 1¼ miles off the new Seafield Colliery, near Kirkcaldy, Fife. The tower, and its installation, was described in our issue of September 23, 1955.

With the success of the borehole the next stage will be to bring back the pontoons, refloat the tower, and put it down about a mile further out to sea for proving the main productive coal measures.

The experiment sought a method of drilling for coal at sea in much the same way as the operation is performed on land, save that the drilling rods were to be enclosed in a guide tube which carried them from the platform of the boring tower, through the silts and sands of the seabed, down to rockhead. The first stage of this new venture, which involved extending the information available about the undersea measures, has been extremely successful. It has been proved that the tower designed for this purpose is satisfactory, the Limestone Group of coals has been sought and proved, and much other valuable information has been obtained about the undersea strata.

ACCESSIBILITY OF SEAMS

The first borehole has shown that the Carboniferous rocks dip more steeply out to sea than they do at the Fife coast. This has the effect of bringing the coals nearer to the shore at the proposed working level. It also indicates that the main productive coal measures which lie some distance above the Limestone Group of coals and outcrop beneath the Firth of Forth, will lie nearer to the Fife shore than was expected



The borehole sites at Inverkeithing

The Index Limestone, which is the marker band for the top of the Limestone series, was reached on October 1, 1955, at a depth of 2,340 ft. and coring continued; the Cardenden Smithy seams were met at 2,397 ft., the Little Splint and Rough coals at 2,560 ft., the Main and Jerseys at 2,574 ft., the Swallow Drum at 2,628 ft., and the Lochgelly Splint at 2,687 ft. A sheet of igneous rock intruded into the strata between 2,710 ft. and 2,770 ft. increased the interval between the Lochgelly Splint and the Five Foot coal which was cut at 2,914 ft. The last core will be brought up from about 3,100 ft.

EUROPEAN FORECASTS

In Luxembourg, estimates have been published of coal production in the European Coal and Steel Community for the whole of 1955. These predict that E.C.S.C. will produce 246,700,000 tons of coal and 68,700,000 tons of coke in the year, compared with 241,600,000 and 59,900,000 tons respectively in 1954.

The reports add, however, that manpower is likely to be a limiting factor in future, and say that the labour force in the mines will probably have declined by 10,800 men during the year. This year the effects of this decline are being mitigated by rising individual productivity.

Demand continues to exceed supply and it is expected that coal stocks will have reached the very low level of 6,800,000 tons by the end of the year, as 1,800,000 tons are expected to be drawn from them during the fourth quarter. To meet this demand, production is to be increased by 1,300,000 tons and imports from the U.S. by about 1,000,000 tons during the quarter.

FAR EASTERN DEVELOPMENTS

In India plans are being made to boost output from the present 37,000,000 tons per year to 60,000,000 by 1961.

At the moment Indian coal mines are partially nationalized, Government collieries accounting for about 15 per cent of current production. For some time there has been talk of complete taking over by the Government of all coal mines, but nothing definite has been made public. Whilst the Government is not prepared to give any guarantee against nationalization neither is it committing itself to a policy of taking over complete control. However, the present discussions with coal industry representatives seem to suggest that a joint expansion programme shared between State owned and privately owned mines may be the alternative to complete nationalization. Preliminary figures indicate that the bulk of the increased output will come from State mines.

India has been promised help from certain European countries in the task of building up her coal output. This help will take the form of technical assistance and up-to-date mining equipment. Without such help, in quantity, the task of increasing total output by 50 per cent over a period of five years would be well nigh impossible. Indian mines are virtually unmechanized and compared to Western standards output per manshift is very low. Overall O.M.S. seldom exceeds 0.5 tons and in some fields it is as little as 3 cwt. This, of course, is a direct consequence of the lack of efficient loading and handling equipment.

From Rangoon comes news that the Burmese Government will shortly sign a contract with Powell Duffryn for the exploitation of the Kalewa coalfield, near the Indian frontier. This is a virgin field in hilly country more than 100 miles from the nearest railway line. It is hoped to start production next year on a limited scale—60,000 tons or thereabouts—rising to 300,000 tons per year by 1959.

There are growing hopes that South Africa's coal export trade may be revived. The amount of coal supplied by the Natal Collieries for export is rising steadily and now accounts for almost 7 per cent of total production. Lack of adequate railway facilities has long impeded South Africa's coal distribution but an immediate start is to be made on a £1,200,000 construction project to provide adequate railway capacity from the Transvaal coalfields.

THE INDUSTRY IN AUSTRALIA

The coal mining industry in Australia is facing difficulties —more so in New South Wales than in other States—because of competition by oil fuel and the resulting dieselization of railways and general industry. Black coal has lost heavily to the brown coal-generated electric power of Victoria, and a serious threat is offered by the Snowy Mountains hydro-electric project which is being rapidly developed in New South Wales, while smaller hydro-electric schemes along the east coast have also added to the curtailment of the use of coal.

The root of the trouble goes back many years. Continuous industrial trouble has lost the once-important export trade and opened the door to the use of oil fuel. Yet latterly, there has been some recognition by labour of the serious consequences of this policy, but the reaction is as yet below the level which the situation demands. For example, the tonnage of coal lost through strikes for the 39 weeks of 1955 amounted to 816,975 tons, while the loss for the corresponding period of 1954 was 1,032,055 tons.

The New South Wales Colliery Proprietors' Association is active in meeting the threat to the industry, but equally active support by labour is imperative for success. The Colliery Proprietors, following the fine lead given by The Broken Hill Proprietary Co. and its subsidiary, Australian Iron and Steel, has spent some £A18,000,000 on mechanization since the end of World War II, and the development of coal preparation and erection of washing plants is enabling coal to compete on a B.T.U. basis in most fuel markets. Most essential in the mechanization field is co-operation by the miners, and the operation of machines to their designed capacity instead of the deliberate restriction of output. More efficient methods of production have brought about a reduction in coal costs and prices to a level now very nearly competitive with oil.

EFFECT OF STRIKES

Yet strikes must be drastically reduced, as their effect is well shown by the production loss indicated. In 1954, New South Wales miners lost 12.4 days work per man from strikes compared with 1.6 days per man in the United States and 0.7 days in the United Kingdom. The effect of strikes is most strongly evidenced in the State's best coalfield, Cessnock, where productivity is lowest, despite advanced mechanization. Research into coal production methods and the utilization of coal, is being pressed in New South Wales and Queensland by an organization formed by the colliery proprietors. The most serious problem facing the industry is compensation for the markets lost to black coal through the irregularity in supply caused by strikes. These markets have gone to residual-oil fuel, and to Victorian brown coal—in the latter case, even to the production of gas. The surplus of "small" coal is a problem and work is being directed towards the adjustment of deliveries and to the extension of the market.

Inefficient, high cost collieries will have to close, either because of inefficiency or costs, or because the grade of coal cannot now be sold in competition with a sufficiency of higher grade coal. Most of these mines were opened in the immediate post-war period when there was an acute shortage of coal. In this post-war period mechanization in the State's collieries has reached a high standard; many are in the world's front rank.

MACHINERY AND EQUIPMENT

Rockershovels in Anhydrite Operation

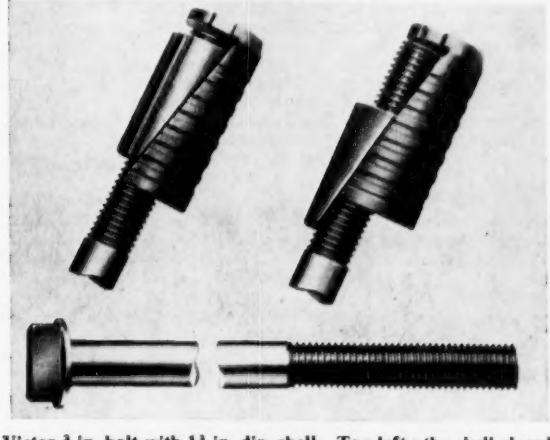
The output of the Marchon Products and Solway Plants is dependent on the regular supply of anhydrite which is mined on site by them. Access to the mine workings is obtained by two parallel tunnels 1,000 yds. long descending at a gradient of 1 in 7. For driving these, Eimco Rockershovels were used.

Eimco 621 E crawler type electric rockershovel loading dumper

The entire mining operation in the anhydrite seams was planned around Eimco loading equipment. The machines operate continuously during three, eight hour shifts per day, loading 4½ yd. dumpers in an average of two minutes. The mine is now in full production and the entire output is loaded by five Eimco Model 621E crawler-type electric rockershovels. These machines are designed for operations under arduous conditions in confined spaces and are the latest development in trackless mining by Eimco (Great Britain) Ltd.

Parallel Expansion of Roof Bolts

Apart from the primary advantages of the economics of roof bolting, which are now widely recognized in the mining industry, the secondary advantages of increased safety, improved ventilation flow, elimination of flammable centres and so on, are factors of great importance. The equipment of Victor Products (Wallsend), Ltd., is therefore of interest, in that the manufacturers' roof bolts have been designed specifically for use with rotary drilling methods. The bolts require no impact for tightening and therefore no percussive hammers are necessary.



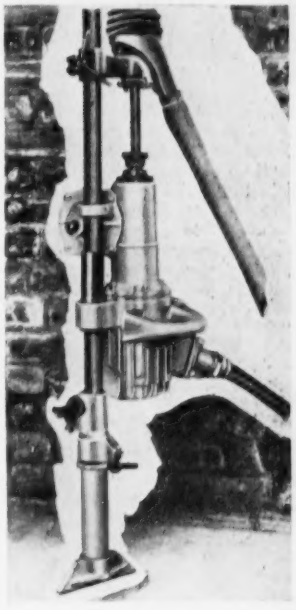
Victor ¾ in. bolt with 1¾ in. dia. shell. Top left: the shell closed showing line of parallel expansion. Top right: the shell open showing line of predetermined and automatic expansion. Bottom: the bolt itself

Each bolt produced by these manufacturers consists of the bolt itself, made from high-quality black bar with a square headed end (1.2 in. A/F) and a 6 in. engagement length of ¾ in. diameter rolled thread, and the shell, which is made up of two half clamps with corrugated outer surfaces for effective grip on the strata throughout the life of the bolt. Working one on the other gives parallel expansion as the bolt is rotated in the slug.

The bolt normally fits into a 1¾ in. diameter hole as drilled by a standard rotary drilling bit, the hole being drilled approximately 1 in. beyond the overall length of the bolt. The bolt is then expanded by hand until it is a comfortable fit in the hole and is pushed home. The slightest turn of the bolt will then cause the shell to grip. The minimum tension required in a bolt is 4½ tons.

The shell is so manufactured that, with a torque of 50 lbs./ft. applied to the bolt, the top of the shell breaks away. This allows all further tightening effort — to a designed torque of 150 lbs./ft.—to give a stress loading in the steel bolt of approximately 5 tons. The breaking strain of a ¾ in. diameter bolt is of the order of 9 tons.

The manufacturers state that the parallel expansion of these bolts provides a firm hold in hard or soft ground. Further, the length of the drilled hole does not need to be accurately controlled, as is the case when the split wedge type of bolt is used, as the tightening of the bolt does not depend on the end-of-hole position. The shell may be partially expanded before insertion to ensure a rubbing fit over a variety of diameters.



The Victor rotary type roof bolt drilling equipment

The drilling equipment is designed for use close up to the working face, thus permitting the drilling of holes and the insertion of roof bolts at the earliest possible moment after roof exposure. The drilling equipment consists of a feed bar which is hand clamped in position between floor and roof with a spring loaded point maintaining rigidity of fixing, a power feed Victor rotary drilling machine for 50 cycle or 150 cycle operation or from compressed air supply of power feed type at 190 r.p.m., a dust collector unit fitted close up to the roof, a nut tightener attachment and the drill rod and rotary bit assembly.

Speeds of advance through the hand-controlled clutch are 12 in. per min. to 23 in. per min. Allowing for a length of 5 ft. 6 in. to 7ft. the complete weight of the equipment is 150 lb. The feed bar assembly varies to accommodate feed heights from 4 ft. to 11ft.

Prefabricated Winding Drum

Redlac Ltd. recently delivered the first prefabricated winding drum manufactured at their Bellshill factory. The cheeks of the drum were made in four sections, and two and a half tons of oak were used as cross spars in the construction. The final weight of the drum was approximately eight tons. The drum was fitted at the shaft of Lochhead Colliery, East Fife.

METALS, MINERALS AND ALLOYS

COPPER.—There has been a definite change in sentiment on the other side of the Atlantic on the copper outlook. When the custom smelters failed to hold their price at 50 c. and copper tumbled precipitately in London there was a general feeling that the worst of the copper shortage was over. This over-optimistic mood faded as the London price staged a recovery and as it became clear that the custom smelters were still able to maintain a premium over the producers' price of 43 c. per lb. Nevertheless, it was still believed that the fall was only delayed and that it would surely come with the New Year. The change that seems to have developed is that there is no longer the conviction that, come January 1, a new look will come over the market.

This perceptible hardening is the outcome of the working of a number of factors. First buying for inventory against LIFO tax assessments should by now be showing signs of drying up. It was considered that the buying last year did not approach the early forecasts in volume and that in the event it would not be so heavy this year either. In fact it shows no signs of abatement. Secondly, and more significantly, copper is already being sold by customs smelters as far forward as February at around current prices. The volume is not great, but it has impressed some consumers who had delayed covering themselves for 1956 in the belief that copper would be cheaper ; and now there may well be a fairly vigorous covering movement among the more jittery. Thirdly the copper industry has given fresh evidence of its greatest weakness—that production is concentrated in a few areas that seem peculiarly susceptible to strikes.

Fourthly McGraw-Hill has just made one of its regular surveys of capital expenditure programmes and the spending scheduled for 1956 (although it may be modified) is quite fantastic. There is no doubt that all the usual signs show that the American economy will be operating at a level at least as high and probably higher than in the second half of 1955 and it will maintain this level till mid-year. This brings us back to point three. Copper consumption is going to run production pretty close and there is going to be no spare metal around if ever a strike does break out. Finally, partly contributing to this sentiment and partly reflecting it, custom smelters have even edged their prices up a little in the last few days, and have been asking as much as 47 c.

Meanwhile, from Rhodesia comes news of pay increases for about 6,000 Africans employed in the mines. These Africans have all been classified upward as a result of a rearrangement of African jobs in the mines and they will receive a rise of 29s. 6d. for 30 shifts. This re-classification is distinct from that agreed under the African advancement programme and the rise is also distinct from the pay claim of the Africans now before the Chamber. That claim applies to all Africans and is for a much larger sum—6s. 8d. a shift (see " Notes and Comments ", page 579.

A statement from the Rhodesia Congo Border Timber Co. (controlled by the four copper companies) announces that the timber supplies of the Copperbelt have been safeguarded by the opening up of vast tracts of virgin forest about 50 miles west of the Copperbelt.

From Chile it is announced by the Chairman of the Foreign Exchange Board that because of the high price of copper the estimated deficit in the Chilean foreign exchange budget has been reduced from $130,000,000 to $30,000,000.

LEAD.—Lead has been a steady market on the basis of 15.50 c. per lb. New York. There is no reason to expect any price movement. Yet another call for higher tariffs has been made, this time by the Western Governors' Mineral Policies Conference. This will be passed to the Western Governors' Mining Advisory Council which is expected to approve it and pass it to Congress for action. Senator George Malone said that he would introduce a bill to repeal the Reciprocal Trades Agreements Act when Congress meets in January. The conference recommended that there should be tariffs of 15 per cent to 60 per cent on most imported metals. Suggested new tariffs would be : 15 c. per lb. on antimony ore and concentrates and 2.5 c. per lb. on lead and zinc whenever the price of zinc falls below 14 c. and the price of lead below 16 c. Tariffs on lead and zinc would thus be operative immediately. Probably all this will be rejected by Congress, but the fact that it is being proposed at all shows that there will be a hard fight when the President introduces his bills to simplify customs and to ratify the new O.T.C.

TIN.—Tin appreciated sharply in New York on news of the breakdown in negotiations in Nigeria. Spot straits metal, which before the weekend was at 96.50 rose to 98.50 c. per lb. America does not look to Nigeria for supplies and, indeed, the Nigerian production is not of great world significance. Yet both London and New York reacted sharply because both are not well stocked at the moment. Malayan exports to the United States in October were only 3,240 tons, about two-thirds of the current rate of requirements there. Tin used in the U.S.A. in September was 7,900 l.tons, which made consumption in the first 9 months of 1955 8 per cent up on the same period of 1954.

So long as the Texas smelter continues to take so much of Indonesian and Bolivian supplies it is to Malaya that the United States must look for the bulk of commercial metal. By the end of this fiscal year the Office of Defense Mobilisation will have completed its tin stockpiling programme but between then and now there is time for a genuine commercial squeeze. Markets have also taken note of the virtual failure of the Geneva conference—a failure that was apparent soon after its opening. Russian policy in the Middle East is also causing anxiety and the possibility of war in the area cannot be ruled out. But it is also possible to visualize circumstances short of war that would interfere with shipping in the Suez Canal and would accentuate the possibility of a squeeze if Malayan tin had to be taken round the Cape. Mr. Gripper, too, in another grim warning about the future of mining in Malaya following his remarks last week about the neglect of prospecting, has expressed the view that there was " little hope of striking any more rich tin-mining land." Then there is the conviction in America that at least in the first half of the next year the economy will be operating at very high levels. All in all the conditions for a temporary squeeze seem to be present.

Ford, Bacon and Davis, an American firm, is to make an engineering and management survey of the mining industry in Bolivia with special reference to tin, but including lead, zinc, antimony, copper, tungsten, manganese, asbestos, sulphur, mica and mercury. The study is financed by the International Co-operation Administration and will cost $162,000. It will be interesting to see what emerges from this survey (that hoary old veteran the possibility of a Bolivian smelter is included) because what seems to be lacking in Bolivia is not the knowledge of what ought to be done but the determination to do it.

ZINC.—There has been a good demand for prime western grades of zinc at 13 c. per lb. and a very keen demand for the special high grades at 14¾ c. per lb. But the market has been without any interesting feature. Mr. Schwartz, manager of Pacific Smelting Company of Torrance, said last week : " We do not expect an increase in the price of zinc for when a recent attempt was made to raise the price from 13 c. to 13.50 c. the attempt failed. It would seem that we should look for the same stable pattern to continue certainly for the rest of this year and well into the first and second quarters of next year." He described the zinc industry as enjoying an " unprecedented economic stability for the last two years."

Smelter production in the United States in October achieved a record level of 89,462 tons, 300 tons more than the previous record established in March this year. Special high grade zinc production increased by 4,100 tons, an increase of 13 per cent, so that output of this grade accounted for 40 per cent of the total smelter output. Furthermore the stocks of this grade increased to 6,391 tons at the end of October against 3,519 tons at the end of September. These figures illustrate the strong effort the producers are making to catch up with demand for the high grade metal. Deliveries to the stockpile were down to 1,942 tons. Deliveries to commercial usage were 85,770 tons, an increase of 2,100 tons on the previous month.

ALUMINIUM.—The Norwegian Ministry of Industry has disclosed details of plans to increase output at the Ardal aluminium plant by 36,000 tons a year at a cost of £19,725,000. The Government company producing aluminium at Ardal and Sunndalsora has reached provisional agreement with the Aluminium Co. of America to borrow $20,000,000 against repayment in aluminium over a 10-year period from 1961. The U.S. concern will also supply alumina for the Ardal plant.

The outlook for American production is discussed this week under " Notes and Comments ".

CHROME.—The U.S. Bureau of Mines has recently released figures of U.S. chromite production in 1954. Hitherto the States have not been an important producer but a very significant advance was recorded last year with an output of 163,365 s.tons, compared with 58,817 in 1953 and a mere 7,000 in 1951. Last year's increase came almost entirely from

Montana, where production rose by a little over 100,000 tons to a total of 129,751 s.tons. For the first time in about 10 years Alaska also featured as a producer.

It is doubtful how much of this increased production was economic as almost the entire domestic output was purchased by the Government either under individual contracts or under the stimulus of the domestic chrome ore purchase programme. The average grade of all domestic production last year was around 38.4 per cent Cr_2O_3 (wet weight).

COBALT. — U.S. consumption of cobalt is rising sharply. During the first six months of this year industrial consumption was in excess of 6,250,000 lb., compared with around 7,250,000 lb. for the whole of 1954. The majority of this consumption is going into the manufacture of cobalt-chromium-tungsten and molybdenum alloys and into magnet alloys, although the use of high speed and cobalt alloys, alloy hard-facing rods and pigments is also increasing. The U.S. Bureau of Mines, from whom this information comes,says nothing about the nuclear uses of cobalt and we have no indication as to the extent to which this is a growth factor.

According to Professor Bicard Jeppe a chrome deposit situated 30 miles west of Eshowe in Zululand may become one of the richest in the world. Tests so far made have revealed an ore running 44 per cent chrome with a chrome-iron ratio of 3½ to 1. Reserves are estimated at 6,000,000 tons.

TITANIUM.—Some indication of the success of I.C.I.'s titanium metal process may be gauged from the fact that, within about six months of their commencing to produce metal on a commercial scale, they are planning to expand their existing fabricating capacity. Hitherto, fabrication has been carried out partly at I.C.I.'s Kynoch works in Birmingham and partly at the Landore and the Waunarlwydd works in South Wales which are both primarily aluminium fabricating plants. Now the company is planning to build a further factory at Waunarlwydd, near Swansea, entirely for titanium fabrication. It is hoped that it will be in production by 1958 and is expected to cost around £2,000,000.

TUNGSTEN.—The Turkish Government do not appear to be making very rapid progress in the development of the substantial wolfram deposits in the Ulu-Dag mountain area near Brussa. The discovery of these deposits (with a metal content estimated to vary from 0.5 to 1 per cent) was first reported in these columns about a year ago, while at the beginning of this year it was stated that they would be worked by the Eti Bank. Now over last week-end the Turkish President is reported to have stated that the deposits are believed to be the fourth largest in the world. However, Eti Bank are apparently still at the stage of investigating possible methods of working them.

URANIUM.—Uranium deposits which may turn out to bear favourable comparison to those of Rum Jungle and the Congo are reported from New Zealand. Mr. R. W. Willet, a senior government geologist (and lately Commonwealth Liaison Officer in London) is quoted as anticipating that the deposits will register more than 2 per cent radio activity. The discovery—the first in New Zealand—was made on the west coast of South Island at Buller Gorge by two prospectors who have since sold their interests to an unnamed British company. The initial discovery last week has lead to a closer examination of the area and by Tuesday of this week three other finds had been reported.

PLATINUM.—As recorded in our price schedule last week the U.K. platinum price was raised £3 10s. to £32 10s. with effect from November 7. With the U.S. price still quoted at $97 to $105 this is a modest increase and still leaves the U.K. refiner's price some £4 or £5 below the free market price.

The London Metal Market

(From Our Metal Exchange Correspondent)

The copper market has continued very firm, and, in spite of cash offerings being greater than of late, the backwardation has not diminished appreciably. As consumer demand is only continuing on an average level it is thought that the present firmness in London is the result of a considerable "short" position which is now falling due. This technical consideration may last for some time to come, and the general expectation is that both the price level and the backwardation will remain as at present. In America the increased London quotation has led to a greater interest in nearby metal and up to 47 c. per lb. has been paid for metal for delivery before the end of the year, but consumers are still hesitant to buy for delivery in 1956 at above the 45 c. per lb. level.

The backwardation in tin has continued to increase, and stocks in registered warehouses have again decreased and are now at a level which is causing some anxiety, but it is hoped that more metal will become available to the market in the near future and that the backwardation will be contained within reasonable limits. Demand throughout the world continues at a very high rate, and it looks as if there will be an excess of demand over production during this year, taking into account the American stockpile requirements. In view of this, and the possibility of the commencement of the International Tin Agreement during 1956, most people consider that the general price level for tin is unlikely to recede for some time to come. On Thursday morning the Eastern price was equivalent to £778½ per ton c.i.f. Europe.

Lead has been a firm market with rumours that the American quotation may be raised, but general opinion at the moment is that the present London quotation can still rise a few pounds before this happens. Demand on the Continent has been good, but in the U.K. there are signs that consumers are well bought.

Zinc remains an uninteresting market and any firmness can be attributed to the general tone of the other metals.

Closing prices and turnovers are given in the following table:—

	November 10		November 17	
	Buyers	*Sellers*	*Buyers*	*Sellers*
Copper				
Cash	£367	£368	£389	£390
Three months	£356	£357	£377	£378
Settlement	£368		£390	
Week's turnover	6,325 tons		5,425 tons	
Tin				
Cash	£769	£771	£793	£794
Three months	£750	£751	£770	£771
Settlement	£771		£794	
Week's turnover	620 tons		925 tons	
Lead				
Current half month	£107	£107½	£108	£108½
Three months	£106½	£107	£107½	£107¾
Week's turnover	2,425 tons		6,525 tons	
Zinc				
Current half month	£91¼	£92	£92	£92¼
Three months	£90¾	£91	£91¾	£91½
Week's turnover	3,300 tons		6,475 tons	

OTHER LONDON PRICES — NOVEMBER 17

METALS

Aluminium, 99.5%, £171 per ton
Antimony—
English (99%) delivered, 10 cwt. and over £210 per ton
Crude (70%) £200 per ton
Ore (60% basis) 23s. 6d./24s. 6d. nom. per unit, c.i.f.
Bismuth
(min. 1 ton lots) 16s. lb. nom.
Cadmium 11s. 6d. lb.
Chromium, 6s. 11d./7s. 4d. lb.
Cobalt, 21s. lb.
Gold, 249s. 8½d.
Iridium, £30 oz. nom.
Manganese Metal (96%-98%) £269 according to quantity
Magnesium, 2s. 4d. lb.
Nickel, 99.5% (home trade) £519 per ton
Osmium, £24/27 oz. nom.
Osmiridium, £40 oz. nom.
Palladium, £7 10s./£8 0s. oz.
Platinum U.K. and Empire Refined £32 10s. oz. Imported £38 0s. oz.
Rhodium, £40.
Ruthenium, £17 oz.
Quicksilver, £90 10s./£91 5s. ex-warehouse
Selenium, 72s. nom. per lb.
Silver, 79¼d. f.oz. spot and 79d. f'd.
Tellurium, 15s./16s. lb.

ORES, ALLOYS, ETC.

Bismuth	50% 7s. 3d. c.i.f. 40% 6s. 3d. lb. c.i.f.
Chrome Ore—	
Rhodesian Metallurgical (semi-friable) 48%	£15 2s. 6d. per ton c.i.f.
,, Refractory 45%	£14 2s. 6d. per ton c.i.f.
,, Smalls 42%	£12 2s. 6d. per ton c.i.f.
Magnesite, ground calcined	£26-£27 d/d
Magnesite, Raw	£10-£11 d/d
Molybdenite (85% basis)	105s. 0d.-108s. 0d. per unit c.i.f.
Wolfram and Scheelite (65%)	240s. 0d./245s. 0d. c.i.f.
Tungsten Metal Powder (98% Min. W.)	20s. 2d. nom. per lb. (home)
Ferro-tungsten (80%-85%)	17s. 2d. nom. per lb. (home)
Carbide, 4-cwt. lots	£39 3s. 9d. d/d per ton
Ferro-manganese, home	£54 10s. 0d. per ton
Manganese Ore Indian c.i.f. Europe (46%-48%) basis 100s. freight	84d. per unit c.i.f.
Manganese Ore (38%-40%)	69d. per unit
Brass Wire	3s. 5½d. per lb. basis
Brass Tubes, solid drawn	2s. 10⅛d. per lb. basis

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

There has been some recovery in business despite the fact that turnover has remained at a fairly low level. The hardening of the pound sterling, particularly against the dollar, supported by an ordinary revenue surplus for the past week, encouraged an improvement in gilt-edged after a somewhat shaky start. As anticipated, the Rhodesian Loan opened at a substantial discount.

Kaffirs were quiet but there was a steadier trend in the market. The settlement of the South African miners' wage claim created a favourable impression and initial calculations suggest that this may add about 4d. a ton to working costs. In the case of prosperous mines, as much as 60 per cent of this may be covered by taxation savings, but the marginal producers will find it more of a burden. The publication of Consolidated Goldfields report led to a slight improvement in these shares and also in West Witwatersrand. Anglo American Corporation were also a firmer feature.

Individual mines benefited, partly from news contained in the Goldfields report, and partly from a revival in demand for mines on the Far West Rand. In the latter case, Dominion Reefs and Vaal Reefs were especially favoured. There was also some interest in one or two of the older properties. Robinson Deep and City Deep both hardened. Sub Nigel recorded a good gain, although in this case the ore reserve outlook remains doubtful. Speculative demand developed for West Vlakfontein which has been closed down for some years. An interesting item of news was the announcement that coal deposits were being investigated on the Springs property. Should this prove a paying proposition, it might well prolong the life of this old mine well beyond existing expectations.

In the Orange Free State market, there was a welcome recovery in Free State Geduld which at one time went as low as 67s. Harmony remained unaffected by the news that the drive from No. 3 to No. 2 shaft is making progress and it is hoped that ore samples will improve as work proceeds.

West Africans were again very quiet but Bremang advanced on the better profit figures for the September quarter. Gold Coast Main Reef, after producing a poor September profit, announced sharply improved figures for October. The proposed capital repayment of 1s. per share by Konongo is now scheduled to take place towards the end of this month.

In the miscellaneous gold section, St. John d'El Rey shot ahead on reports of American buying, presumably stimulated by the uncertain state of political affairs in Brazil. Zambesis and Goldfields Rhodesian were also harder.

Diamonds recorded little change although Consolidated African Selection Trust were again easier. Sustained American demand for platinum caused a slight improvement in Potgietersrust Platinums and Watervaal.

The higher price of copper brought in continental support for this market, particularly for the more popular dividend payers. In this respect Chartered and Rio Tinto were the chief beneficiaries. The latter company's Canadian subsidiary has just announced favourable initial results from development in North West Quebec. American buying of Rhodesian Selection Trust caused a rise in these shares and the sharp advance in profits and dividend announced by Mount Lyell, the low grade Tasmanian producer, were well received.

The higher price of tin failed materially to affect the share market. It was felt that this rise might be temporary, being attributed to the labour dispute in Nigeria. The breakdown of talks with the unions in that country caused a general easing of prices in the Nigerian section. Beralts were again an outstanding feature.

Barriers were featureless despite the good figures and dividend announced by Mount Isa. Lake George stood out against the general trend. The small loss announced by the company for the past financial year was considered most encouraging and it is hoped that now that labour relations are on a better footing, the current period will produce some worthwhile profits.

Elsewhere, Canadians were little affected by the strength of Wall Street, and International Nickel succumbed to some profit-taking despite the recent excellent results and the fact that the company is obviously benefiting from the high price of copper.

Finance	Price Nov. 16	+ or — on week
African & European	3/6	
Anglo American Corpn.	8½	+ ⅛
Anglo-French	22/-	
Anglo Transvaal Consol.	26/3	
Central Mining (£1 shrs)	43/3	+ 3d
Consolidated Goldfields	56/9	
Consol. Mines Selection	38/9	
East Rand Consols	1/10½	
General Mining	4½	
H.E. Prop.	7/7½	
Johnnies	40/-	
Rand Mines	3½	
Rand Selection	43/9	
Union Corporation	47/-	— 1/-
Vereeniging Estates	4½	— ⅛
Wits	37/6	
West Wits	38/6	+ 6d
Rand Gold		
Blyvoors	25/9	3d
Brakpan	6/9	
Buffelsfontein	32/9	3d
City Deep	11/9	+ 1/-
Consol. Main Reef	21/3	
Crown	2/6	+ ⅛
Daggas	2/6	
Dominion Reefs	25/-	+ 1/10½
Doornfontein	23/3	3d
Durban Deep	31/3	
E. Champs	4/3	
E. Daggas	10/3	+ 3d
E. Geduld (4s. units)	30/6	
E. Rand Props.	2⅛	— ⅛
Geduld	4½	
Govt. Areas	6/1½	+ 1½d
Grootvlei	21/9	6d
Harteebestfontein	36/6	+ 3d
Libanon	8/-	
Luipaards Vlei	18/-	
Marievale	21/-	6d
New Kleinfontein	6/3	
New Pioneer	12/-	3d
Randfontein	46/-	1/-
Robinson Deep	16/6	+ 1/-
Rose Deep	10/6	
Simmer & Jack	4/-	
S.A. Lands	23/1½	— 7½d
Springs	3/10½	+ 3d
Stilfontein	26/6	3d
Sub Nigel	37/6	+ 1/3
Vaal Reefs	30/-	+ 9d
Van Dyk	3/6	
Venterspost	14/-	+ 3d
Vlakfontein	18/-	+ 6d
Vogelstruisbult	30/-	
West Driefontein	5½	— ⅛

Rand Gold contd.	Price Nov. 16	+ or — on week
W. Rand Consolidated	38/9	
Western Reefs	36/-	
O.F.S. Gold		
Freddies	7/7½	
Freddies Consolidated	4/-	— 3d
F.S. Geduld	3⅜	+ ¼
Geoffries	14/-	— 3d
Harmony	29/3	— 3d
Loraine	6/9	— 3d
Lydenburg Estates	14/9	— 3d
Merriespruit	11/-	+ 3d
Middle Wits	13/1½	— 1½d
Ofsits	59/6	+ 3d
President Brand	64/4½	
President Steyn	33/6	+ 6d
St. Helena	26/9	3d
Virginia Ord.	11/9	
Welkom	17/-	— 3d
Western Holdings	3⅜	— ⅛
West African Gold		
Amalgamated Banket	2/1½	
Ariston	5/9	
Ashanti	21/7½	— 6d
Bibiani	4/-	
Bremang	1/7½	+ 4½d
G.C. Main Reef	2/7½	+ 1½d
Konongo	3/4½	+ 1½d
Lyndhurst Deep	1/6	
Marlu	9d	
Taquah	1/10½	— 1½d
Western Selection	8/10½	— 1½d
Australian Gold		
Gold Mines of Kalgoorlie	12/-	— 3d
Great Boulder Prop.	10/6	— 1½d
Lake View & Star	16/7½xd	— 10½d
Mount Morgan	21/6	— 3d
North Kalgurli	6/9	— 1½d
Sons of Gwalia	3/6	
Western Mining	9/-	— 3d
Miscellaneous Gold		
Cam & Motor	9/-	
Champion Reef	5/9	— 1½d
Falcon Mines	6/6	
Globe & Phoenix	24/6	— 3d
G.F. Rhodesian	8/7½	+ 3d
Motapa	1/1½	
Mysore	3/-	— 1½d
Nundydroog	7/9	
Ooregum	4/4½	+ 4½d
St. John d'El Rey	19/4½	+ 1/4½
Zams	57/6	+ 2/6

Diamonds and Platinum	Price Nov. 16	+ or — on week
Anglo American Inv.	8½	— ½
Casts	29/9	— 6d
Cons. Diam. of S.W.A.	7½	
De Beers Defd. Bearer	6½	— ⅛
De Beers Pfd. Bearer	16½	+ ½
Pots Platinum	11/9	+ 3d
Watervaal	17/6	+ 3d
Copper		
Bancroft	40/-	— 1/3
Chartered	74/6	+ 2/6
Esperanza	3/-	— 3d
Messina	8½	+ ½
Nchanga	14	— ¼
Rhod-Anglo-American	5½	+ ⅛
Rhod-Katanga	27/-	+ 1/-
Rhodesian Selection	45/9	+ 6d
Rhokana	40½	+ ¼
Rio Tinto	3½	+ ⅛
Roan Antelope	25/-	— 4½d
Selection Trust	4⅛	+ ⅛
Tanks	8½	+ ½
Tharsis Sulphur Br.	6¼	+ ¼
Tin (Eastern)		
Ayer Hitam	24/3	— 3d
Gopeng	9/-	
Hongkong	7/6	
Ipoh	21/10½xd	
KanuKamunting	9/9	
Kepong Dredging	3/3xd	
Kinta Tin Mines	16/-	+ 6d
Malayan Dredging	9/7½	
Pahang	12/1½	— 1½d
Pengkalen	11/4½	— 1½d
Petaling	9/4½	— 3d
Rambutan	20/6	+ 3d
Siamese Tin	8/10½	
Southern Kinta	17/-	
S. Malayan	8/3	— 3d
S. Tronoh	7/10½	— 3d
Sungei Kinta	15/9	
Tekka Taiping	8/9	+ 7½d
Tronoh	8/7½	— 1½d
Tin (Nigerian and Miscellaneous)		
Amalgamated Tin	11/9	— 1½d
Beralt Tin	36/-	+ 1/9
Bisichi	5/4½	
British Tin Inv.	23/9	
Ex-Lands Nigeria	2/6	+ 1½d
Geevor Tin	14/6	

Tin (Nigerian and Miscellaneous) contd.	Price Nov. 16	+ or — on week
Gold & Base Metal	2/-	
Jantar Nigeria	7/-	— 1½d
Jos Tin Area	14/6	+ 3d
Kaduna Prospectors	2/-	
Kaluna Syndicate	3/-	
London Tin	9/1½	— 1½d
United Tin	1/10½	
Silver, Lead, Zinc		
Broken Hill South	57/6	+ 6d
Burma Corporation	2/10½	
Consol. Zinc	53/6xd	— 9d
Lake George	13/3	+ 1/6
Mount Isa	61/-xd	— 1/3
New Broken Hill	40/9xd	— 2/-
North Broken Hill	79/4½	
Rhodesian Broken Hill	13/4½	+ 1½d
San Francisco Mines	27/-	
Uruwira	5/10½	
Miscellaneous Base Metals and Coal		
Amal. Collieries of S.A.	51/3	+ 3d
Associated Manganese	35/7½	— 4½d
Cape Asbestos	10/-	— 4½d
C.P. Manganese	31/6	— 1/-
Consol. Murchison	61/10½	— 1/3
Natal Navigation	3	
Turner & Newall	100/9	+ 9d
Wankie	18/-	— 1½d
Whitbank Colliery	4½	
Canadian Mines		
Dome	$29	
Hollinger	$36½	+ ½
Hudson Bay Mining	$122	— 1
International Nickel	$144	— ½
Mining Corpn. of Canada	£8¼	+ ¼
Noranda	$95	+ 1
Quemont	£10	+ ½
Yukon	4/1½	
Oil		
Anglo-Iranian	5⅜	+ ⅛
Apex	31/-	
Attock	40/-	— 6d
Burmah	3¼	
Canadian Eagle	49/6	+ 1/3
Mexican Eagle	23/3	
Shell	6¼	+ ⅛
Trinidad Leasehold	40/6xd	+ 6d
T.P.D.	27/-	— 6d
Ultramar	31/6	+ 2/9

COMPANY NEWS AND VIEWS

Increased Pay for South African Miners

Pay increases for about 26,000 European mineworkers were announced at the beginning of this week in a joint statement issued by the Mining Unions' Joint Committee and the Gold Producers' Committee of the Transvaal and Orange Free State Chamber of Mines.

The offer by the Gold Producers' Committee accepted by the Mining Unions' Joint Committee, involves: (1) an increase of 8d. per shift; (2) an increase in the annual holiday leave allowance of £7 10s., bringing the total of this allowance up to £35; (3) the consolidation of 10s. per shift of the present cost-of-living allowance of 17s. 8d. per shift into wages. The increase in wages and the consolidation into wages of 10s. per shift of the cost-of-living allowance became effective at the beginning of this month. The increased annual holiday leave allowance will be effective from July 1, 1956.

In addition to the European mineworkers, financial improvements in conditions of service were also awarded to all officials on the gold mines involving: (1) increased annual holiday leave allowance £7 10s., bringing the total to £35; (2) consolidation of £13 per month of the present cost-of-living allowance into salaries; and (3) an increase in salaries of £1 per month.

While no official estimate has been published as to what these increased payments will cost the industry, the general opinion would appear to be that a reasonable estimate would be £1,000,000. It has been suggested in some quarters that 4d. per ton milled would cover the total cost of the wage award. If so, this is not to be taken to mean that distributable profits would necessarily suffer corresponding reduction, and in many cases as much as 60 per cent of the award might be offset by a reduction in tax and lease payments.

It may be of interest to read this news against a background of our latest summary of Rand and O.F.S. operating results for the first nine months of this year, which we give below.

TRANSVAAL AND O.F.S. GOLD AND URANIUM PRODUCERS

Comparison and Analysis of Salient Results for the nine months to 30th September 1955 and 1954

Heading	*Jan./Sep.*	*Transvaal Cos.*	*O.F.S. Cos.*	*Total*
Tons milled ..	1955	44,277,200	5,250,500	49,527,700
	1954	43,431,700	2,885,000	46,316,700
Ounces Produced	1955	*9,318,402	1,566,717	10,885,119
	1954	†9,038,074	677,299	9,715,373
Grade per ton: dwt.	1955	4.037	5.979	4.241
	1954	3.985	4.695	4.030
Working Profits:	1955	26,881,369	6,316,694	33,198,063
Gold £	1954	26,717,399	825,065	27,542,464
Working Profits :‡	1955	11,112,205	1,129,509	12,241,714
Uranium £	1954	5,562,732	—	5,562,732
Total Profits from	1955	37,993,574	7,446,203	45,439,777
Gold & Uranium £	1954	32,280,131	825,065	33,105,196
Working Costs per	1955	38/9	51/1	40/1
ton	1954	37/5	52/10	38/5

* Includes miscellaneous producers, 381,772 ozs.
† Includes miscellaneous producers, 383,704 ozs.
‡ *Uranium Working Profits* are *before* provision is made for interest on and repayment of loans (East Champ and Randfontein excepted for 1954 period) and include, in certain cases, profits from pyrite and sulphuric acid.

Drilling on the West Wits Line

West Witwatersrand Areas' financial year which ended on June 30, 1955, witnessed some interesting drilling results. A total of three holes—E.11.D, E.9.P and E.9.N—together with deflections, were put down and since the company's year-end a further deflection to hole E.9.N had been started in addition to work on a new borehole known as E.9.Q.

While the results obtained from these holes were disappointing in terms of gold values and reef information, the geological and structural data disclosed will be of inestimable value in eventually unravelling the complex structures and intricacies of this most difficult sector of the West Wits line.

No change was reported in the company's portfolio during the past financial year. Holdings included 3,001,680 shares in Blyvooruitzicht; 1,826,305 shares in Doornfontein; 2,221,496 shares in Libanon; 1,023,800 in Venerspost and 1,444,006 in West Driefontein.

Year to June 30	*Total Divs.*	*Revenue Other*	*Taxation*	*Net Profit*	*Dividends*	*Carry Forward*
	£	£	£	£	£	£
1954	763,218	28,917	2,640	722,780	672,672	170,654
1953	632,806	36,784	29,530	562,650	588,588	120,546

At their present price of around 38s. West Wits. 2s. 6d. give a return of over 5.2 per cent. Mr. P. S. Hammond is chairman. Meeting, Johannesburg, December 8.

New Central Wits in 1955

An interesting feature in the report and accounts of New Central Witwatersrand Areas for the year ended June 30, 1955, concerned drilling operations conducted by West Witwatersrand Areas in the neighbourhood of Farm Gerhardminnebron No. 4 in the Far Western Rand over part of which New Central Wits holds mineral rights.

Two boreholes were specifically dealt with. In the case of the first, known as E11D situated in the "Conjoint Drilling Area" a final depth of 6,664 ft. was reached at which—in the absence of any recordable values—it was stopped. At borehole E9N on the Farm Klienfontein No. 9, situated outside the "-Conjoint Drilling Area," however, some interesting values were obtained from deflections. The most interesting of these concerned intersections of the Carbon Leader in two bands. A mean of four intersections in each band revealed 68 in. dwt. in the case of the top band and 77 in. dwt. in the bottom band.

During the past financial year the company, mainly due to earnings of £31,269 from share dealings, made a profit of £40,663 as compared with the previous loss of £7,385. Unappropriated profits of £19,156 (Dr. £11,493) were carried forward. Market valuation of investments as at June 30, 1955, totalled £476,114. This figure represented gold mining investments amongst which O.F.S. and Far Western Rand issues figured prominently.

Mr. M. W. Rush is chairman. Meeting Johannesburg, November 30.

Jeanette Suspends Operations

Jeanette Gold Mines has announced that loan facilities granted to the company by Anglo American Corporation of South Africa having been almost fully drawn, it has been decided to apply to the South African Minister of Mines for permission "to suspend operations at the mine for the time being." In the event of his approval being given, the mine will be placed on a caretaker basis and certain assets of the company will be sold. The entire staff at the mine, consisting of 22 Europeans and 270 Natives, will be offered employment, on no less favourable terms than they presently enjoy, at other Orange Free State mines of the Anglo American Corporation group.

Harmony Accepts Central Mining's Offer

Harmony Gold Mining Company announced this week that it accepted on November 11 the offer from The Central Mining & Investment Corporation and Rand Mines, to subscribe for 450,000 of its reserve shares at 28s. 9d. per share, this being the closing market price on November 10. The proceeds will enable the company to liquidate the drawings made against the temporary loan granted to the company.

Zaaiplaas Maintains Dividend

Zaaiplaas Tin Mining Company, the Transvaal tin producer, maintained its total dividend distribution for the year ended July 31, 1955, at 40 per cent, or 2s. per 5s. share on the issued capital of £89,250. Production of tin concentrates at 335 l.tons represented a decline of 16 l.tons compared with the preceding year and this was reflected in the lowered revenue from tin shares to £526,359 compared with £572,464 in the previous year. After providing for all expenses, including taxation, the year's surplus amounted to £53,277 (£58,600) out of which the dividend payments took £35,700. The allocation to general reserve was again £2,500 although this year there was an outgoing of £4, 184 (nil) to meet silicosis liabilities. The sum of £8,569 (£13,200) was expended on fixed assets and the carry forward at the end of July last was £78,110 compared with £75,786 brought in.

The feature of the director's report is that local demand for tin has outstripped the company's smelter capacity and steps are being taken to meet this situation.

Mr. R. L. M. Warren is chairman. Meeting, Pretoria, November 25.

Benguela's Higher Receipts

From total revenue of Esc. 296,036,364 (Esc. 268,016,022) earned by the Benguela Railway during the first nine months of the year 1955, working expenses of Esc. 161,017,674 (Esc. 147,455,854) were deducted leaving net operating receipts of Esc. 135,018,690 as against Esc. 120,560,168 during the previous corresponding period.

This improvement was due to increased activity in all sections of operations. Kilometres run advanced to 4,150,000 from 3,855,148. The number of passengers carried at 618,408 compared with 598,039 and brought in Esc. 10,332,851 (Esc. 9,962,168); International traffic totalled 204,823 tons (170,768 tons) earning Esc. 88,671,074 (Esc. 73,290,135); mineral traffic amounted to 290,280 tons (270,860 tons) bringing in Esc. 142,389,101 (Esc. 134,749,873). Local traffic of 425,043 tons (382,426 tons) accounted for Esc. 51,224,573 (Esc. 46,784,111). Other receipts in Africa provided Esc. 3,418,765 as against Esc. 3,229,735.

The whole of the debenture stock of Benguela Railway, together with 90 per cent of the equity capital, is owned by Tanganyika Concessions.

Lower Costs at Geita

The year ended June 30, 1955, was one of particular significance to Geita Gold Mining Company (which is owned as to 78.63 per cent by Kentan Gold Areas) in that costs per ton milled dropped to 34s. 9d. from 38s. 2d. during the preceding year. This, together with the increase in tonnage milled, were the main factors contributing to the substantially increased working profits totalling £48,755 as compared with £7,646.

Year to June 30	*Tons Milled* (000)	*Gold Rec'd* (*ozs.*)	*Per Ton milled Yield* (*dwts.*)	*Cost* (*s. d.*)	*Ore Reserve Position** *Tons*	*Dwts.*
1955	273.2	41,087	3.01	34 9	1,403,000	4
1954	256.5	38,952	3.04	38 2	1,346,000	4

* Development of footage, excluding that charged to capital account, during the year amounted to 6,179 ft. (1954 - 8,267 ft.)

After the addition of £578 from bank interest receivable, Geita's total profits were £49,333 (£7,787). Profits unappropriated rose to £60,139 from £8,397.

An interesting feature of the Kentan Gold Areas report in respect of the year ended June 30, 1955, concerned the conversion (as previously announced) of the unsecured interest-free loan from Tanganyika Holdings into Kentan shares at par. As this event took place after the close of the past financial year, however, the fact that the loan has now been extinguished is not reflected in the balance sheet. Lord Grey is chairman of Kentan Gold Areas. Meeting, London, November 30.

Western Selection September Quarterlies

Outstanding amongst Western Selection and Development Group quarterlies for the period ended September 30, 1955, was that from Bremang Gold Dredging. This company is engaged in a programme under which all its four dredges will eventually be transferred from their present positions to the Extended Areas (Offin River). So far two dredges have been moved and it is good to hear that No. 1 achieved during August, the highest results yet since operations commenced in the west area. At No. 2, also on the Extended Areas, running time was affected by a screen breakdown while flood conditions made working conditions difficult. At all events a total of 2,528,600 cu. yds. were dredged by the company as a whole from which 12,117 ounces of fine gold were recovered representing 2.51 grains per cu. yd.

Company	*Dec. qtr.* 1954	*Mar. qtr.* 1955	*June qtr.* 1955	*Sept. qtr.* 1955
Amal. Banket	146,236	120,979	82,202	103,303
Ariston	153,046	137,381	143,410	143,860
Bremang	20,350	4,924	42,161	53,020
G.C.M.R.	49,871	32,391	25,026	14,839

At Amalgamated Banket Areas mill throughput rose to 231,418 tons from 228,649 tons during the previous quarter from which 37,313 f.oz. of gold (34,338 f.oz.) were recovered. Ariston reported a total of 118,890 tons milled with a recovery of 5.67 dwt. of gold per ton. Working costs were 47s. 1d. per ton milled. Amongst development results obtained during the quarter at this property sampling of the No. 2 Orebody in No. 207 North Crosscut were particularly good. In this section from 26 to 28 ft. West values of 12.4 dwts. of gold per ton were disclosed over a width of 21 inches while from 36 to 42 ft. West the corresponding values were 10.7 dwt. over 73 in. The reef was not fully exposed, however, in either case.

I.N.C.O. Earns $4.53 per Common Share in First Nine Months of 1955

For the nine months ended September 30, 1955, International Nickel Company of Canada earned the equivalent of $4.53 per common stock compared with $3.15 in the comparable period of 1954. In terms of U.S. currency the year's net earnings, so far, of $67,651,667 were the highest for any corresponding nine months in the company's history. This profit figure exceeds by some $20,000,000 the best previous performance and amply indicates the company's strong position as a major producer of copper and of nickel.

Dr. John F. Thompson, chairman, in his letter to shareholders accompanying the report, announced that trial operations of the equipment in the first unit of the company's iron ore recovery plant near Copper Cliff, Ontario, has begun and that the plant is scheduled to come into commercial production in the near future.

Mount Lyell's Expanding Profits

The Mount Lyell Mining and Railway Company is paying a final dividend of 11¼ per cent making 16¼ per cent for the year ended September 30, 1955, which compares with the payment of 8¼ per cent for the year 1953-54 and with 6¼ per cent for the year 1952-53. This satisfactory distribution was made possible by the expansion in net profits to £A808,231 against £A398,845. The net earnings figure was arrived at after writing off prospecting and development charges of £A.28,077 (£A40,540), depreciation charges of £A167,806 (£A143,430) and taxation liabilities £A317,000 (£A175,000). The final dividend is payable in Melbourne on December 19.

Warrants for this dividend will be issued to stockholders on the London register on November 18 and arrangements have been made whereby warrants may be negotiated at the Australia and New Zealand Bank, 4 Threadneedle Street, E.C.2.

Chenderiang Tin Pays 15 Per Cent

Chenderiang Tin Dredging has recommended the payment of a final dividend of 10 per cent, making, with the 5 per cent interim paid in October last, a total of 15 per cent per £1 stock unit on the £100,000 issued capital.

That Chenderiang was able to return to the dividend list after a two-year absence was due to greater output, 201 tons against 125 tons, increased revenue from tribute workings, and a favourable tax settlement in connection with the company's war damage compensation. The dividend distribution required a net £8,500, the sum of £4,000 was allocated to general reserve bringing this account up to a total of £32,000, and the forward balance was increased from £1,312 to £10,882.

The outlook for the current year is good. Output for the first six months at 110 tons tin ore represents an increase of 17 tons tin ore yielded in the comparable period during the year under review and with the higher average price ruling for tin on the international markets revenue shou'd benefit accordingly. Mr. Jack Addinsell is chairman. Meeting, London, November 17.

Thos. W. Ward's Turnover Up

Group turnover of Thos. W. Ward rose by some £6,000,000 to £36,500,000 during the year ended June 30, 1955. Of this total £15,000,000 related to subsidiary companies as compared with just over £10,000,000 in respect of the previous year, the increase of £5,000,000 being due to the extent of £3,500,000 to contributions from new subsidiaries acquired.

Year to June 30	*Total Profit*	*Taxation*	*Net Profit*	*Dividends*	*To Reserve*	*Carry Forward*
	£000	£000	£000	£000	£000	£000
1955	2,709.3	1,215.5	1,137.0	240.2	400.0	567.2
1954	2,084.6	1,024.7	788.5	201.4	341.1	459.6

Regarding the present year's trading, Mr. H. W. Secker, the chairman, indicated that operations so far compared favourably with the corresponding previous period. Provided that current deflationery measures did not result in too drastic a contraction of credit and capital expenditure, prospects should be very good.

Meeting, Sheffield, November 25.

Company Shorts

Eastern Transvaal's Tax Credit.—Profits after tax earned by Eastern Transvaal Consolidated Mines and its subsidiary companies showed a marked increase to £282,231 from £190,442 during the preceding year. This was due to a credit of £79,749 representing overprovision for taxation written back which compared with a debit of £23,500 for taxation in respect of the previous year. After dividends which absorbed £80,938 (same) a transfer of £250,000 (nil) was made to general reserve. The balance of unappropriated profits carried forward declined slightly to £158,456 from £164,345.

In his statement to shareholders Mr. L. P. Kent, chairman, gave re-estimated ore reserves for New Consort, Sheba and Agnes Gold Mines. At New Consort, 156,200 tons were available having a value of 8.82 dwt. over a stoping width of 74.4 in. Sheba reported 90,600 tons at 9.48 dwt. over a width of 53.7 in. while Agnes' total was 62,700 tons valued at 6.3 dwt. over 33.1 in. Meeting, Johannesburg, November 21.

Konongo to Repay 1s. Per Share.—The High Court Order confirming the reduction of capital has now been registered with the Registrar of Companies and repayment of 1s. per share will be made to shareholders of Konongo Gold Mines registered on the books at the close of business on November 15.

The announcement from the company also adds that in order to comply with the provisions of the Bank of England Exchange Control, a form which must be completed before payment can be made, will be posted to shareholders entitled to receive the sum of £5, or over, on November 29.

Merriespruit Reminds Debenture Holders.—Merriespruit (Orange Free State) Gold Mining reminds stockholders that their right to convert 25 per cent of their holding of 3 per cent first mortgage debenture stock into ordinary stock of the company will expire at the end of this year. Conversion rights can only be exercised in respect of 25 per cent of multiples of £40 of stock.

Ultramar Redeems Loan Stock.—Ultramar Co. has announced that its wholly-owned subsidiary, Caracas Petroleum, S.A., is negotiating a loan from New York Banks which, it now appears, will be granted, subject to the completion of the necessary formalities.

Caracas Petroleum, S.A., has informed the parent company that subject to these formalities being completed sufficient funds will be remitted to Ultramar for it to redeem the whole of its outstanding loan stock now amounting to £1,731,178, redeemable at a 15 per cent premium.

Caracas Petroleum, S.A., proposes to make this remittance from a further repayment of advances by S.A.P. Las Mercedes and from free moneys it already holds.

Rooiberg Passes Dividend.—Rooiberg Minerals Development report a net profit of only £3,723 for the year ended June 30, 1955. This figure was arrived at after providing for all charges, including taxation, and compares with net earnings in the preceding year of £172,598. A sharp drop in both the tonnage milled, 11,526 tons against 26,381 tons, and the grade of ore crushed provide the reasons for the poor results. Mr. A. W. Stewart is chairman. Meeting Johannesburg, November 24.

Taquah and Abosso Operates at a Loss.—The report and accounts of Taquah and Abosso, the West African gold producer, reveals that after providing for all expenses, including £39,123 for depreciation of fixed assets, a loss was incurred amounting to £12,220, which compares with a net profit in the previous year of approximately £50,000. Mr. Robert Annan is chairman. Meeting, London, November 22.

Trepca Earns Less.—The surplus available to Trepca Mines after providing for all charges during the year ended September 30, 1955, totalled £40,886, compared with £52,026 in the preceding year. The decline in earnings was due largely to the lower profit realized on the sale of investments which at £22,426 was virtually 50 per cent less than the £43,689 brought in from this source in 1953-54.

The report and accounts will be posted to shareholders this week and the annual meeting will be held on December 16.

Selco-Exploration Acquires Nickel-Copper Claims in Canada.—Selco Exploration Co., the Canadian subsidiary of Selection Trust Ltd., has entered into an agreement with Thompson Grubstake 1955—Canadian prospecting syndicate—for the acquisition of 80 claims over a copper-nickel prospect near Lake Delahey in Pontiac County in the Province of Quebec, held by Thompson Grubstake 1955. The consideration is $25,000 cash and 750,000 free vendors shares in a new company having a capital of 3,500,000 shares of which Selco Exploration has an initial commitment to subscribe firm for 550,000 shares at 30 c. per share.

Indian Copper Seeks Permission for Bonus Issue.—The Indian Copper Corporation has decided to submit applications to the C.I.C., New Delhi, and to the U.K. Treasury for permission to capitalize part of its free revenue reserve to make a bonus capital issue of 1 new unit of stock for each existing unit. The company has also decided to pay an interim dividend at the rate of 10 per cent, free of income tax, payable in respect of the year ending December 31, 1955. The date on which the books will be closed and payment made will be announced later.

Sons of Gwalia Announce Loss in 1954.—Sons of Gwalia incurred a loss on gold mining operations for the calendar year 1954 of £29,212 which compares with a loss of £6,106 in 1953.

As previously announced the company has transferred its domicile to Western Australia and this will become effective on and from December 15 next. Messrs. Bewick, Moreing and Co. will continue to act as consulting engineers and general managers to the company, positions they have held for 56 years.

Siamese Tin Announces 90 Per Cent Acceptance of Recent Offers.—It has been announced by the Siamese Tin Syndicate that acceptances in excess of 90 per cent have been received to its offers recently made for the purchase of Renong, Katu and Burma-Malaya companies. Accordingly, these offers have become unconditional

Ribon Valley's Karl Wildi Agreement.—It has been announced by Ribon Valley (Nigeria) Tinfields that final agreements have now been signed covering a 50 per cent interest in the Karl Wildi Underground and/or Underwater Mining Plant which it is proposed to apply initially to the company's Sabon Gida deposits in Nigeria.

MINE MANAGER required for small but developing Barytes mine in Scotland. Graduate, about 35, with good operating and mine planning experience preferred. Write for application form to Box No. 11N7, Wm. Porteous & Co., Glasgow.

METALLIFEROUS MINE SURVEYOR required immediately, permanent post. Apply in writing, giving references and stating age, qualifications and experience, to the Manager, South Crofty Ltd., Pool, Redruth, Cornwall.

GRADUATE MINING ENGINEER required for Mining Company EGYPT. Responsible underground experience essential. Directing/Controlling mechanized operations, drilling, blasting, etc.; Minimum age 30. Salary £E.1,200/1,800, according age, experience. Free married accommodation; two years' Contract. First Class passages. Write Box M.J. 364, c/o 191 Gresham House, E.C.2.

MILL SUPERINTENDENT. Qualified man required by British owned Mining Company (Tin and Tungsten) operating in BURMA. Commencing salary and allowances £150 per month, plus free quarters, medical attention and accident insurance; 3 year contract with paid leave, passages (including dependants) paid by Company. Excellent opportunity for man with necessary experience. Write stating age, qualifications and previous experience to Box M.J. 336, C/o 191 Gresham House, E.C.2.

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RAND LEASES

(Incorporated in the Union of South Africa)

SATISFACTORY IMPROVEMENT IN PRODUCTION

MR. S. G. MENELL ON THE YEAR'S ACTIVITIES

The 23rd annual general meeting of Rand Leases (Vogelstruisfontein) Gold Mining Company, Limited, will be held on December 6 in Johannesburg.

The following is the review by the Chairman, **Mr. S. G. Menell,** which has been circulated with the report and accounts:—

Production during the year under review showed a satisfactory improvement on the previous year's results due to the greater availability of Native Labour. The tonnage milled was increased by 241,500 tons to 2,227,000 tons and working costs per ton, at 36s. 8d., were 3s. 4d. lower than in the previous year. The total profit for the year, including sundry revenue, amounted to £582,789, equal to 5s. 3d. per ton milled, as compared with £317,460, equal to 3s. 2d. per ton, for the previous year.

OPERATIONS

There was an encouraging improvement in the sampling results obtained in development on the Kimberley Reef and Main Reef Leader, but results on the Main Reef and Bird Reef, including the development on Bird Reef advanced into your Company's Mining Area by the Consolidated Main Reef Mines and Estate, Limited, were disappointing. Development on South Reef was largely confined to the making available of certain stoping areas between the 24th and 27th levels, no work having been done on this reef below the 34th level.

ORE RESERVES

The total Ore Reserve, recalculated as at June 30, 1955, amounted to 4,718,000 tons having an average value of 4.16 dwts. over a stoping width of 48.0 inches. Compared with the Ore Reserve at June 30, 1954, there is a decrease of 253,000 tons with a decrease in the value of 0.09 dwts. and an increase of 2.5 inches in the stoping width. The decrease in the value and the increase in the stoping width are caused by the inclusion in the current Ore Reserve of increased tonnages on Bird and Kimberley Reefs where stoping widths are higher than on the Main Reef Series and where the average value of the payable ore is lower due to the lower pay limits applicable to mining operations on these reefs.

The South Reef is providing progressively decreasing tonnages of ore, but the tonnage formerly drawn from this source is being replaced by ore from the Bird and Kimberley Reefs, which are becoming of greater economic importance to your Mine, as the following tabulation will show:—

	Percentage of ore hoisted to mill during year		
Source	1952-1953	1953-1954	1954-1955
South Reef	19.9	15.1	11.7
Bird Reef	2.6	3.3	8.6
Kimberley Reef	8.6	11.1	13.5

SHAFT SINKING PROGRESS

The sinking of No. 1 Tertiary Shaft is proceeding satisfactorily, the depth reached at the end of September, 1955, being 1,221 feet below the 36th level. Stations have been cut on the 37th, 38th, 39th, 40th and 41st levels, from which development operations will be commenced after the completion of the shaft. The continued steep angle of dip disclosed by shaft sinking, together with the persistence of payable values exposed by development down to the 36th level, has resulted in a review of the decision to suspend shaft sinking at a depth to serve the 40th level. It has now been decided that it will be advantageous to continue uninterrupted sinking operations for a further 480 feet below this level to allow of the opening-up of two additional levels. Work is in progress on making provision for the increased hoisting facilities required and a permanent engine room is being cut on the 35th level. Sinking from this level and raising from the present sheave-wheel position to extend the shaft to the 35th level are proceeding.

The Kimberley Reef No. 2 Incline Shaft has been stopped temporarily at a length of 2,610 feet, to serve the 10th level and development is in progress on that level.

This concludes my review of the year's operations and I desire to place on record your Board's appreciation of the services rendered by the Manager of the Mine, and his staff, as well as the staff at both the Head and London Offices of the Company.

HARTEBEESTFONTEIN GOLD MINING

(Incorporated in the Union of South Africa)

MR. B. L. BERNSTEIN ON THE YEAR'S OPERATIONS

The Sixth Annual General Meeting of Hartebeestfontein Gold Mining Company, Limited, will be held on December 6 in Johannesburg.

The following is an extract from the circulated review of the Chairman, **Mr. B. L. Bernstein:—**

Excellent progress was made in bringing your mine to the production stage. As shareholders are aware, official production was commenced with the month of July, 1955, just two and a half years after the commencement of shaft sinking on January 1, 1953. For the first three months of production, July to September, 1955, the working profits including sundry revenue have been £224,069 from 141,000 tons milled at a recovery grade of 7.681 dwts. per ton. Working costs during this period averaged 65s. 8d. per ton.

The shaft sinking programme necessary at this stage was completed during August, 1954. The shafts were fully equipped and the permanent hoisting arrangements have been installed. Development operations were commenced at No. 1 Shaft in August, 1954, and at No. 2 Shaft in September, 1954.

Development on reef is in progress at No. 1 Shaft on the 4th, 5th, 6th, and transfer levels and cross-cutting to reef is proceeding on the 3rd level. At the end of September, 1955, the total footage advanced amounted to 73,858 feet, of which 65,086 feet were at No. 1 Shaft and 8,772 feet, all in country rock, were at No. 2 Shaft. Of the footage at No. 1 Shaft, 24,113 feet were on reef and 23,585 feet were sampled, of which 22,790 feet, equal to 96.6 per cent. were payable, having an average value of 35.11 dwts. over a channel width of 13.7 inches, equivalent to 481 inch-dwts.

MILLING

The erection of the first section of the reduction plant, of 50,000 tons per month capacity, which was commenced in August, 1954, was sufficiently advanced to permit of milling of development rock being commenced in May, 1955. Stope preparation started during the same month and progressively increasing tonnages of ore from stoping were treated up till the end of June, 1955, when the production of gold was officially commenced.

Since July and up till the end of September, 1955, mining and milling operations have become progressively more stabilized and the proportions of the ore sent to the crusher station from various sources during September were as follows:— From stopes 62.3 per cent.; from development 28.4 per cent., and from surface dumps 9.3 per cent., the ore from the latter two sources being at an average grade considerably below that of the ore from stopes. After crushing, the ore is mechanically screened and the waste rock discarded, with a consequent beneficial effect on overall milling costs and marked improvement in the grade of the ore milled. During September, 23.3 per cent. of the ore crushed was discarded as waste.

EXTENSION OF REDUCTION PLANT

Work is in progress on the extension of the reduction plant, and it is anticipated that, dependent upon the sorting rate achieved, a milling rate between 65,000 and 75,000 tons per month will be reached towards the end of the current financial year. Further plant expansion is anticipated during the following financial year.

Up till September, 1955, the restricted allocation of power obtained from the Electricity Supply Commission, supplemented by the full generating capacity of the company's power station, was insufficient for the mine's expanding requirements. During September, 1955, however, the company was granted an increased allocation of power which has been found to be sufficient for the mine's present requirements. The company's power station has been closed down.

On August 24, 1955, the board of directors announced that, by arrangement with the Atomic Energy Board of South Africa, the company will erect a plant with a treatment capacity of 100,000 tons per month for the extraction of uranium from the residue slimes of the reduction plant. Arrangements are being made through the Atomic Energy Board to obtain a loan sufficient for the entire capital cost of the plant, repayable over the contract period. In terms of the contract with the board the price payable for uranium will be related to the cost of production on a basis which will provide for the redemption of the capital cost of the plant, plus interest, together with a reasonable margin of profit. Construction work on the plant has been commenced and is proceeding satisfactorily.

CAPPER PASS & SON LIMITED

EFFORTS TO COMBAT RISING COSTS

POLICY OF TECHNICAL IMPROVEMENTS TO REDUCE COSTS

The 44th annual ordinary general meeting of Capper Pass and Son Limited was held on November 17 at Bristol, **Mr. A. D. Pass, O.B.E., D.L., J.P.** (the chairman), presiding.

The following is his circulated statement:—

From the Directors' Report and Accounts you will have no doubt noticed an interesting feature of the results for the last two years, namely that the genuine smelting and trading profit in each year, after allowance for changes in metal values, is almost identical.

In the year ending March 31, 1954, there was a fall in metal prices of approximately £100,000 to meet which we transferred £50,000 from the Market Reserve. In the year ending March 31, 1955 there was a rise in metal prices of rather over £100,000 and we have transferred £50,000 to the Market Reserve before arriving at the balance available for appropriation.

I think these two years give a clearer example than usual of the use of the Market Reserve as a balancing factor, taking tax into account of course.

Your Directors consider that the £410,000 at which this Reserve now stands is adequate to meet any possible fall in the prices of metals in the near future.

IMPACT OF INFLATION

It has not been an easy year. The cost of fuel, power and labour increased steadily over the year. I do not propose to discuss the causes or effects of inflation in general but only its impact on your company.

As you know we buy and sell all over the world, have to compete with foreign smelters and must pay the producer enough to make shipments to us worthwhile. This being so we cannot pass on increasing costs to our customers and so maintain our profit margins in the way that many organisations trading in the home market can. It does not matter to such a firm as ourselves whether this is done by a monopoly established by law, such as the National Coal Board, or whether it is a Trade Association pursuing the same technique in a more tactful manner. In either case it makes the task of firms who must compete in the markets of the world difficult.

Faced by this situation we continue to do all we can to reduce our costs by a constant process of technical improvement. Last year's accounts show that so far we have not been unsuccessful. During last year we spent some £127,000 on capital account. As I said a year ago we must reckon on having to spend yearly a sum of this order to maintain our position.

Our liquid resources continue to be satisfactory and we believe we should continue to hold a substantial sum available either to finance stock or to take advantage of any opportunity for investment which might arise.

Incidentally, the Government Stock which we hold, is redeemable in 1956 and we hope that the provision of £5,000 we have made against possible loss on realisation will not be needed.

THE CURRENT YEAR

To turn to the current year. During the first half of the year the pattern has been similar. Metal prices have risen further. Costs of fuel, power and labour have been increasing even faster than before. Our efforts to reduce costs also continue but it is very difficult to keep pace with the recent rate of inflation.

We suffered from a shortage of raw materials during the Dock Strike of this summer, which forced us to curtail operations during June and July. Apart from this supplies of raw materials have been good.

Altogether then, for the first six months of this year, our profits have been a little below those of last year.

There is one further point I should mention. Your Board has always believed that the higher management of this company should be as closely in touch with our smelting operations as possible.

Since we started our new works in Yorkshire shortly before the last war that works has expanded enormously. It is now doing the larger part of our operations. It was only a question of time for the Head Office to be moved to the major works. That has now happened and since May the Head Office of the company has been in Yorkshire. The Bristol Office will continue in being, not only to serve the Bedminster works but to handle some of our commercial and other work.

I wish to congratulate and thank all employees of Capper Pass & Son Limited and Victor G. Stevens Limited on your behalf for the excellent results which continue to be achieved.

The report and accounts were adopted.

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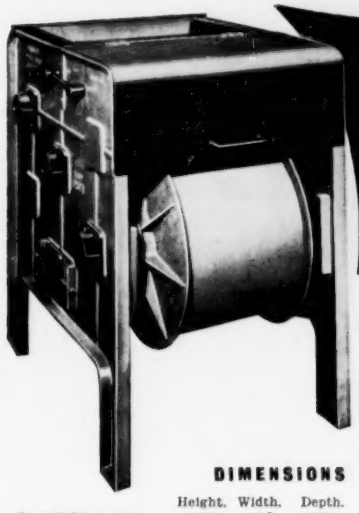

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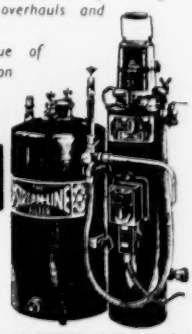

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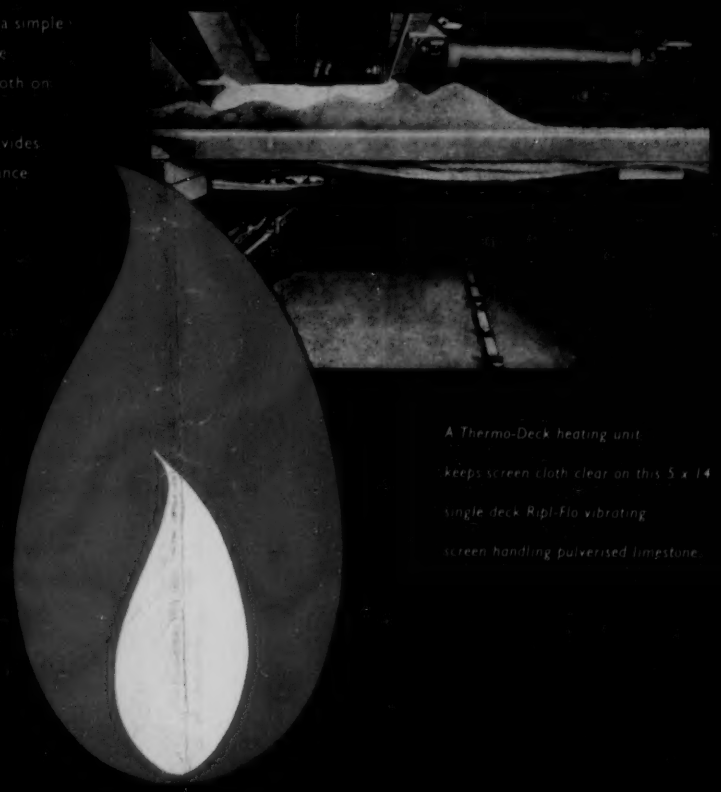

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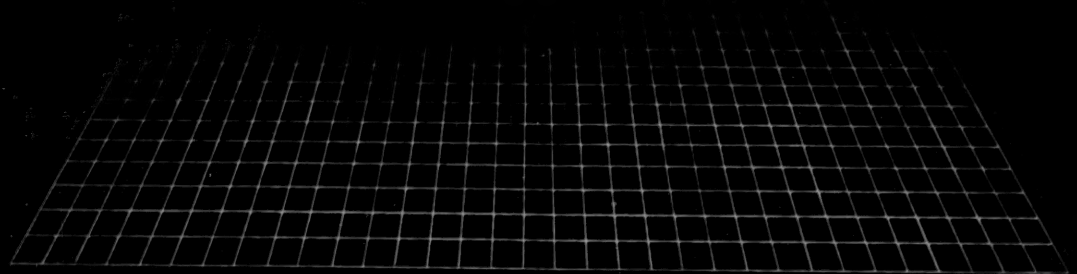

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